

# AUTOMOTIVE INDUSTRIES

**AUTOMOBILE**

Published Weekly  
Volume 72  
Number 5



JULIAN CHASE, Directing Editor

DON BLANCHARD, Editor

P. M. HELDT, Engineering Editor  
JOSEPH GESCHELIN, Eng. Editor  
T. LAWTON SLAUGH, News Editor  
ATHEL F. DENHAM, Detroit Editor

JEROME H. FARRIS, Ass't Editor  
GEOFFREY GRIER, Art Editor

## Contents

News of the Industry .....	129
Calendar of Coming Events .....	138
Just Among Ourselves .....	139
The Stout Scarab .....	140
One Basic Pattern Dominant in 1935 Car Styling. By Joseph Geschelin .....	142
The New Long Semi-Centrifugal Clutches. By Athel F. Denham .....	146
P. & W. Has New 750 hp. Radial .....	150
Automotive Abstracts .....	151
Production Lines .....	153
Hardened Alloy Cast Iron Cylinder Liners Triple Mileage Between Engine Overhauls .....	154
The Forum .....	156
New Developments .....	158
Advertisers Index .....	43

C. A. MUSSelman, Pres. and Gen. Mgr.; J. S. HILDRETH, Vice-Pres. and Director of Sales; W. I. RALPH, Vice-Pres.; G. C. BUZBY, Vice-Pres.

### OFFICES

Philadelphia—Chestnut & 56th Sts., Phone Sherwood 1424  
New York—239 W. 39th St., Phone Pennsylvania 6-1100. Chicago—Room  
1116 London Guarantee & Accident Bldg., Phone Franklin 9494. Detroit—  
814 Stephenson Bldg., Phone Madison 2090. Cleveland—1140 Guardian Bldg.,  
Phone Main 6860. Boston—301 United Shoe Bldg., Phone Liberty 4460. San  
Francisco—444 Market St., Room 305, Phone Garfield 6788. Long Beach, Cal.—  
1595 Pacific Ave., Phone Long Beach 613-238. Portland, Ore.—72 Fifth St.  
Cable Address ..... Autoland, Philadelphia

SUBSCRIPTION RATES: United States, United States Possessions, and all countries in the Postal Union, \$1.00 per year; Canada and Foreign, \$4.00 per year. Single Copies, 25c.

Member of the Audit Bureau of Circulations  
Member Associated Business Papers, Inc.

Entered as second-class matter Oct. 1, 1925 at the post office at Philadelphia, Pa., under the act of March 3, 1879.  
Automotive Industries—The Automobile is a consolidation of the Automobile (monthly) and the Motor Review (weekly), May, 1902; Dealer and Repairman (monthly), October, 1903; the Automobile Magazine (monthly), July, 1907, and the Horseless Age (weekly), founded in 1895, May, 1918.

Owned, Published and Copyrighted by



CHILTON COMPANY  
(Incorporated)

### Executive Offices

Chestnut and 56th Streets, Philadelphia, Pa., U. S. A.

C. A. MUSSelman, President

FRITZ J. FRANK, Executive Vice-President

FREDERIC C. STEVENS, JOSEPH S. HILDRETH, GEORGE H. GRIFFITHS, EVERETT B. TERHUNE, ERNEST C. HASTINGS, Vice-Presidents  
WILLIAM A. BARBER, Treasurer. JOHN BLAIR MOFFETT, Secretary

Automotive Industries

# SHAKEPROOF



OUR New  
1935  
CATALOG



Send for your  
**FREE COPY TODAY!**

HERE it is—a complete presentation of all Shakeproof products, including technical information of great value to every engineer. Describes and illustrates the complete Shakeproof line, including lock washers—both internal and external types—locking terminals, self-locking set screws, and the new line of Shakeproof tapping screws. You will find our new 1935 catalog a real help in solving many serious production problems. Be sure to write for your free copy now!

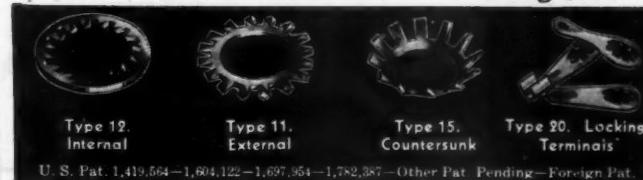


# SHAKEPROOF Lock Washer Company

Distributors of Shakeproof Products  
Manufactured by Illinois Tool Works

2505 N. Keeler Ave.

Chicago, Ill.



U. S. Pat. 1,419,564—1,604,122—1,697,954—1,782,387—Other Pat. Pending—Forign Pat.

February 2, 1935

# FOOTBURT

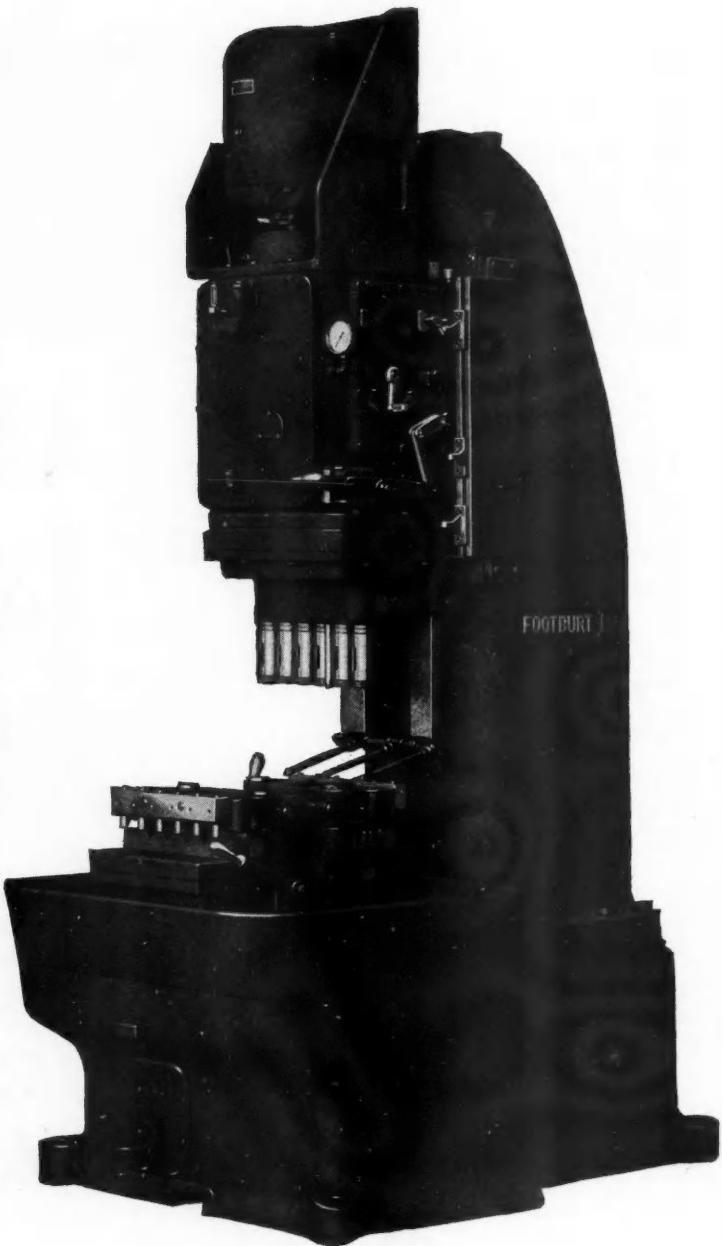
## HYDRAULIC FEED MACHINES

**F**OOTBURT Hydraulic Feed Units are complete within themselves.

The same motor that drives the spindles also drives the hydraulic pump for the feed. Units are used in building up Way Drilling Machines to operate in one, two, three, four or five directions on the part being machined.

Both feed rate and length of rapid traverse and slow feeds are variable. Three standard sizes are available so that it is possible to handle a wide variety of applications.

We will be glad to figure with you on Footburt equipment to handle your drilling work. Why not send us your blueprint together with production requirements?



**THE FOOTE-BURT COMPANY • CLEVELAND, OHIO**

Detroit Office: 4-151 General Motors Building

Chicago Office: 565 Washington Boulevard

# Model Announcements in Fall

## Code Extended with Regularization Amendments; Wolman Board Continued

WASHINGTON, Jan. 31—President Roosevelt today extended the automobile manufacturing code to June 16, 1935, and at the same time approved three amendments.

One of these amendments in effect assures continued administration support for the automobile settlement and the Wolman Board, a second authorizes agreements on new model announcements intended to regularize production, while the third calls for payment of time and a half for all hours worked in excess of 48 per week.

Under the code as amended, members of the industry are required to comply with the provisions and requirements for the settlement of labor controversies which were established and have been in operation since March 19, 1934. This amendment is considered to be equivalent to administration endorsement of the Automobile Labor Board set-up.

In addition, members of the industry are authorized by another amendment to enter into agreements with respect to fall announcements of new models and the holding of automobile shows in the fall of the year. The intent of such agreements, of course, will be to secure greater regularity of production and employment in the industry.

The third amendment provides that employees who are not subject to the 48-hr. weekly limit in the code shall be paid time and a half for hours in excess of 48 per week. This amendment, which is the only recognition given to the complaints of the A. F. of L., was incorporated in response to complaints from labor that on occasion such exempted employees were permitted to work excessive hours.

Commenting on the code as amended, the President said that it made "substantial advances toward regularization of employment for this large group of workers; and I believe that with the continuance of the provisions made by the government in the establishment and

(Turn to page 153, please)

pleted cars awaiting shipment.

Production for the month of January for a number of makes has been running well ahead of shipments, and it is to be expected that reports of wholesale sales by the AMA and Department of Commerce in a week or two will show totals somewhat below actual production.

It is quite possible that the building up of banks of cars has been in anticipation of potential labor troubles shutting off sources of supply, as reported in *Automotive Industries* several weeks ago. Of these the most serious at present is that in connection with the glass workers at Pittsburgh, Cleveland and Toledo.

New car registrations for December amounted to 75,600, as compared with 58,624 in December, 1933, and 107,648 during November of this year, according to estimates based on returns from 47 states.

January production of Oldsmobiles has surpassed the figures for any previous January in the company's 37 years of automobile manufacturing, according to D. E. Ralston, vice-president and general sales manager. Employment is increasing daily.

Graham-Paige reports orders for 4700 cars received during January, and shipments during the month of 1300 cars, more than double last year's. Production was 2000 cars for January. Graham-Paige employment during the past two weeks has been increased to 2900 workers and is expected to reach 4000 by the middle of February. Nearly 1000 are employed at the body plant in Wayne, Mich., at present.

De Soto dealers delivered a total of 5,568 new Airstream and Airflow De Sotos and Plymouths at retail during the first three weeks of January.

Shipments of the Hudson Motor Car Company for the year ended Dec. 31, 1934, aggregated 85,835 cars, including both Hudsons and Terraplanes, the company announced today. This is an increase of 109.4 per cent compared with 1933 shipments.

Ford retail truck sales for the first 20 days of January, 1935, were the highest for this period in the past nine years.

## Weather Hampers Retail Car Sales

**Stocks Now Adequate to Insure Prompt Delivery; Output Leads Shipments**

by Athel F. Denham

Detroit Editor, *Automotive Industries*

After climbing steadily for the first two-thirds of January, domestic retail deliveries showed a slight drop-off in some lines toward the month's end. Inclement weather conditions prevailing throughout the country are believed to be largely responsible for this action. Even through this period of floods and blizzards, however, sales were far above comparable figures for the same period last year.

Except on a few chassis models not yet in quantity production, stocks at present are sufficiently adequate to insure almost immediate delivery, and, as a matter of fact, some car manufacturers are at the present moment carrying fairly heavy stocks of com-

## Eastman Urges Bigger ICC With Special Division to Regulate Motor Carriers

Federal regulation by the Interstate Commerce Commission of motor carriers of persons and property operating in interstate commerce is recommended in a comprehensive report on transportation legislation made to Congress this week by Federal Coordinator of Transportation Eastman. In addition to the motor

carrier legislation, enactment of laws intended to meet the many pressing railroad problems and to provide for the Federal regulation of water carriers and pipe lines are urged in the report. In general, so far as motor carriers are concerned, the report contains no major sur-

(Turn to page 153, please)

# Houde Intervention Petitions Denied; U.S. Must Clarify 1 Point of Complaint

By Lloyd Graham

Buffalo Correspondent, Automotive Industries

Petitions to intervene in the suit of the United States against the Houde Engineering Corporation were denied Friday, Jan. 25, by Federal Judge John Knight in the Western New York district, Federal Court, at Buffalo. The suit in question is brought by the government under NIRA to force the Houde Engineering Corporation to recognize United Automobile Workers' Federal Labor Union No. 18839, an affiliate of the American Federation of Labor, as the sole collective bargaining agent for all Houde employees.

Three motions to intervene had been made, one by Joseph W. Dambach for himself and the so-called "forgotten 400" employees who did not vote in the plant election, another by the Houde Welfare and Athletic Association, an independent union; and still another by William P. McGahan, a Houde employee who was hired after the plant election.

In his decision on the petitions of intervention Judge Knight held that the rights of the petitioners seeking intervention will be properly protected in the suit without intervention. His decision reads in part:

"If it appeared from the petition that the interests of the plaintiff (Dambach) in the suit were not properly represented and that a substantial loss would result to him from his not being a party, the right to intervene would be absolute.

The question of the construction of Section 7-A, NIRA, is a matter which concerns the employees or the defendant of which this petitioner is one. If his interest, as an employee, is such as to entitle him to intervene, a denial of that right would be an abuse of discretion.

Assuming that the petition is sufficient in alleging that the rights of the petitioner are not fairly represented and that he will be substantially affected in his rights if not permitted to intervene, it is my opinion that the petition does not show such an interest as entitles him to intervene.

"My reasons are that his interests are sufficiently represented in the action as constituted. The settlement of the rights of the employer and employee will be determined through this suit as made without intervention."

The same reasons were applied in the decisions in all three motions for intervention. Edward W. Hamilton, attorney for two of the petitioners, says that it is likely he will appeal for a reargument of the two petitions of his clients. He points out that if the defendant makes a case it is possible to construe that his petitioners will thus be represented but that if the defendant, Houde, should fail to answer and allow the decision to go by default whereby the United Automobile Workers' Federal Labor Union No. 18839 would be recognized as the sole collective bargaining agent for all employees, whether members of that union or not, the rights of his clients would be seriously and unavoidably affected.

In the plea of the defendant, Houde, for clarification of the government's complaint, Judge Knight ordered that the prosecution clarify on but one of the eight points men-

tioned by Houde. This point has to do with the government's position on the purported authority of the union in representing all employees or any group or all groups.

In this particular Judge Knight directed United States Attorney George L. Grobe to clarify the government's position on the union's authority. Mr. Grobe later stated that the complaint would be amended to show that the government believes that the union (United Automobile Workers' Federal Labor Union No. 18839) is the sole and exclusive collective bargaining agency for all employees and for each and every group of the defendant's employees.

"The statute (section 7-A)," Judge Knight ruled, "recognizes all the employees as one group to bargain cooperatively and also recognizes the right of separate groups of the entire body of employees to bargain collectively. I incline to the opinion that the word 'or' as used here may fairly be interpreted as meaning 'and' and in effect a conjunctive. The meaning of the allegation may be said to be that the elected representative has the right to act in a situation which may arise as to a group and a group within the entire group of all employees.

"However, in view of the assertion of the district attorney that the government intends and it is the intent of the pleader to allege authority in the elected representatives to act collectively for all employees and for all groups of employees, I think any doubt regarding the effect of 'or' in the connections used should be resolved in the defendant's favor, and the complaint should be amended in such clauses as purport to

show the authority in the alleged representative to bargain collectively for all employees or for any group of employees so as to show the alleged authority to act for all employees and all groups of employees.

"Such amendments couched in the expression 'for all employees and for each and every group of employees' it seems to me, meets the objections raised by the corporation."

The amendment to the complaint will be filed within ten days and the defendant, Houde, will be expected to file its answer ten days thereafter.

## APEM to Elect Directors At Detroit Feb. Meeting

An important feature of the annual APEM meeting, to be held Feb. 15 in the Book-Cadillac Hotel, Detroit, will be the election of seven directors-at-large to serve for a term of one year. The nominees are:

W. M. Albaugh, secretary-treasurer, Thompson Products, Inc.; P. R. Beardsley, secretary-treasurer, Sealed Power Corp.; Vincent Bendix, president, Bendix Aviation Corp.; C. S. Davis, president, Borg-Warner Corp.; M. C. Dewitt, vice-president, Champion Spark Plug Co.; C. E. Hamilton, Automotive Gear Works, Inc.; Ben F. Hopkins, president, The Cleveland Graphite Bronze Co.; Raymond P. Lipe, president, Defiance Spark Plugs, Inc.; W. K. Norris, president, McQuay-Norris Mfg. Co.; J. E. Otis, Jr., president, Stewart-Warner Corp.; Lothair Teeter, vice-president, Perfect Circle Co.; G. W. Thompson, vice-president, Noblitt-Sparks Industries, Inc.; H. H. C. Weed, vice-president, Carter Carburetor Corp.; C. E. Wilson, vice-president, General Motors Corp.

Members of the nominating committee were P. L. Barter, McCord Radiator & Manufacturing Co.; H. E. Blood, Detroit Gear & Machine Co.; C. C. Bradford, Eaton Products, Inc.; T. R. Navin, Republic Gear Co.; A. G. Phelps, Delco-Remy Corp.

## Lansing Workers "Co-op" Organization Brews Battle With Merchants, Doctors

Formation of the Lansing Industrial Association, an organization of automobile and automotive equipment employees that started within the Oldsmobile Employees Association for the purpose of cooperative buying and the operation of various social services, including medical and dental care, has started a battle between local retailers and factory workers.

The association, formed early in January, has already opened a medical building and employed six full-time people including three doctors and two nurses. Lansing physicians refused to cooperate in the plan and the doctors were brought here from other cities.

At the start the organization was limited to persons employed by the Olds Motor Works, but the by-laws have been amended to take in all industrial workers in Lansing. Already 1,700 Oldsmobile employees have joined, and a meet-

ing of Motor Wheel corporation workers has been held for the consideration of the plan. They are expected to take action soon.

The movement is being opposed by the Michigan Federation of Retail Merchants as well as the local Chamber of Commerce and other retail trade groups.

## Willys Buys \$200,000 of Receivers' Certificates

Purchase of \$200,000 of receivers' certificates of the Willys-Overland Co., by John N. Willys a few days ago is further evidence of his renewed interest in the comeback of the company and his approval of the 1935 model of Willys 77.

Toledo banks have aided in financing the production program at the plant by subscribing for \$325,000 of the certificates.



W. S. Knudsen presents safety awards to winner in the safety contest he sponsored among the 67 GM plants in this country and Canada. Left, R. G. Kremer, personnel director of the Chevrolet Indianapolis plant, which made the best improvement last year. Next is V. A. Cleman, manager of the Fisher Seattle plant, which with the Chevrolet Atlanta plant tied for first place, neither plant having any lost time because of accidents. Mr. Knudsen is in the center, and at the right is S. D. Gallagher, personnel director of the Chevrolet Atlanta plant.

## New Brake Block Material Is Highly Heat Resistant

A new brake block material for use on truck and bus brakes has been invented by Carl Schell, vice-president of the Thermoid Rubber Company, Trenton, N. J., and has been placed in production by the company. It is reported the material was subjected to extensive laboratory and service tests and stood up well under them, and is said to be particularly heat-resistant.

Blocks removed from the brakes of standard buses after service tests are said to have been in perfect condition and to have caused no scoring and checking of the drums. A gas-electric bus fitted with these brake blocks made stops consistently in 22 ft. from a speed of 20 m.p.h., according to the manufacturer, and that without fade-out. It is also claimed that with this new material less air pressure is required to effect a stop in a given distance.

## 20 Congressmen to Ask Motor Probe, Dillon Says

More than 20 U. S. Congressmen are pledged to support a resolution asking Congress to investigate the automotive industry, according to a statement made at a recent meeting of AFL local union No. 18,677 (Kelsey-Hayes) by F. J. Dillon, general organizer for the Federation in Detroit.

Mr. Dillon also threatened that unless automotive employers "recognize the inherent and legal right of working people

in this industry, of men and women who toil, to organize and negotiate with them upon a fair and equitable basis they will be responsible for precipitating the greatest industrial upheaval our Nation has ever witnessed."

## Campbell-Ewald Accounts To New Canadian Agency

Organization of the MacLaren Advertising Company, Ltd., Toronto, Ont., is announced with J. A. MacLaren as president. Associated with Mr. MacLaren, as directors, are: G. W. Hague, E. V. Rechnitzer, I. E. Reynolds, and George T. Scroggie.

All these men have been associated with Campbell-Ewald Limited, whose Canadian accounts, including General Motor Products of Canada, Ltd., have been taken over by the new agency. On international accounts, the MacLaren Advertising Company will maintain agency affiliations with Campbell-Ewald company of Detroit. Branch offices will be maintained in Montreal, Winnipeg, Calgary and Vancouver.

## Damon, Curtiss Aeroplane and Motor Co. President

Thomas A. Morgan, president of the Curtiss-Wright Corp. has announced the election of Ralph S. Damon as president of Curtiss Aeroplane and Motor Company, Inc., of Buffalo. Mr. Damon has been with the Curtiss Company since 1922.

## Evans Joins Hemphill

Dave Evans, racing driver and more recently connected with demonstrations of the Cummins Diesel engine, is now director of research department of the Hemphill Diesel Engineering Schools, Chicago.

## Steel Gains Further On Automotive Orders

### Continued Ingot Capacity Increase Indicated; No Enthusiasm for Price Rise

The steel market has become so accustomed to measuring its health solely by the percentage of its ingot capacity in operation, which this week rose another three points to 52½ per cent, that, where not so long ago the principal yardstick consisted of the ups and downs in unfilled orders, the extent of backlog is now completely lost sight of. Placing of orders, furnishing of specifications and shipping instructions have become coincidental in automotive buying, nearly all of the demand being for immediate delivery.

Taking the market's 1934 record as a basis, the possibility of a further gain to somewhere near 60 per cent of ingot capacity is indicated, but in connection with this it is recalled that last summer the rate declined in the course of a single fortnight from 56 to 23 per cent of the industry's capacity. It is recollection of this sharp dip that makes for reluctance on the part of some producers to wax enthusiastic over a program of partial upward price revision, when second quarter filing gets under way in February. Some talk of common black sheets being most in need of a moderate price advance, others think the cold finished should come in for first consideration. The first half of February should furnish a clearer view of the situation.

With some flat steel producers who cater almost exclusively to automotive consumers operating at full capacity, the average rate for the flat steel industry is now around 66 2/3 per cent. Demand for stainless material has assumed impressive proportions. The same may be said of automotive alloy steels. Rods for the making of automobile bolts are the most active wire products item. Non-integrated finishing mills are pressing hard for lower prices on sheet bars.

**Pig Iron**—Automotive foundries are taking iron at a very satisfactory rate. Blast furnace interests would rather see the now stabilized market conditions leading to progressive gains in consumption than a repetition of the short-lived booms in recent years, followed as they always were by reactions.

**Aluminum**—Exports of aluminum from Canada last year were nearly 42,000,000 pounds, the heaviest since 1930, when 43,000,000 pounds were shipped abroad and a 25 per cent improvement over the year 1933. The market for primary metal is steady and unchanged. Secondary metal shows a rising tendency.

**Copper**—Domestic demand shows some slight improvement. Prices are unchanged.

**Tin**—With Sterling exchange selling at normal rates, tin prices moved fractionally lower, the week's opening price for spot Straits being 50.70 cents, compared with 50.95 cents at the preceding week's close. There is much uncertainty as to what effect announcement of the Supreme Court's decision on the Gold Clause will have on the market.

# Election Results Minimize Importance of AFL Withdrawal from Wolman Board

By Don Blanchard  
Editor, Automotive Industries

Automobile Labor Board figures, issued Jan. 24, recapitulating the results of the elections it has held in nine Detroit plants, took the punch out of the American Federation of Labor announcement on the same date that its affiliated automotive unions were withdrawing from the President's settlement.

The ALB figures, which are presented in the accompanying box, showed that neither the federation nor any other labor organization had proved its right to represent more than a minor fraction of the workers in these plants. Although later elections may change the picture revealed by these figures materially, the implications of the present situation naturally didn't go unnoticed in Washington where ears perhaps are more finely tuned to the voice of the ballot box than any place else in the country. As a consequence, it will be surprising if future AFL claims that it is empowered to speak for automotive labor, are not taken with a grain of salt by the powers in the capital. Moreover, despite the fulminations of labor officials, well informed Washington observers believe that the Administration will continue to support the Wolman Board.

In announcing the withdrawal, William Green, president of the federation, is reported to have revealed that he had written the Automobile Manufacturers Association on Jan. 8 stating that the withdrawal announcement would be withheld if the employers agreed on a plan for a new board.

Another development of the week was a letter from F. J. Dillon, Detroit AFL organizer, to the Secretary of Labor attacking the Wolman Board and stating that the elections put the board's stamp of approval on the company union.

What tactics the federation will pursue in the future, presumably will be decided at the meeting of the AFL executive council which opened its quarterly meeting in Washington on Tuesday of this week. Meanwhile Mr. Green has announced the dates and places where he will appear in his tour of automotive centers to address mass meetings of automotive workers planned by the Federation. Mr. Green's itinerary includes Cleveland and Toledo, Feb. 17; St. Louis, Feb. 18; Milwaukee, Feb. 19; South Bend, Feb. 20; Flint, Feb. 21; Lansing, Feb. 22; Detroit, Feb. 23; Buffalo, Feb. 24. In addition Mr. Green plans to address the Michigan Legislature at Lansing at 1 p. m. on Feb. 21. The Detroit date is the day on which the meeting of the National Council of United Automobile Workers Unions will be held. At this meeting the subject of a general strike in the industry will be discussed, which, if called, it is presumed would be aimed mainly at the Automobile Labor Board.

Reverting to the election returns, just what the fact that 90 per cent of those voting indicated no organization affiliation

Summary of Group Affiliation Votes in Cadillac, Chevrolet Forge, Dodge Forge, Lynch Road Truck, Amplex Division of Chrysler Corp., Plymouth, Highland Park Chrysler, and Main Dodge Plants	
Unaffiliated	34,273
American Federation of Labor	1,847
Employees Associations	508
Associated Automobile Workers of America	266
Mechanics Educational Society of America	164
Auto Service Mechanics Association	16
Auto Workers Union	14
Society of Designing Engineers	7
International Workers of the World	4
Blank Ballots	465
Void Ballots	772
Total Ballots Cast	38,336
Number Eligible to Vote (approx.)	40,000

means is the subject of considerable controversy. In Mr. Dillon's opinion, the high percentage was due to the fact that the AFL repudiated the program and advised the workers not to reveal their affiliation and, secondly, that the returns prove that the workers have no confidence in the board.

On the other hand, the fact that 90 to 95 per cent of the eligible workers did vote, would seem to indicate that if the unions had more members than the returns indicate, such members disregarded the advice of their officers not to participate or they were coerced into voting as the AFL charges. As to coercion, if workers were forced to vote, they could still have cast blank ballots or indicated any affiliation they desired since the balloting was secret.

Certainly on the strength of the returns, there is no reason to believe that the AFL has a majority, or anywhere near a majority, in the plants where elections have been held even giving the federation maximum possible credit for blank and void ballots

and for non-voters. With these included, the most the AFL could claim to represent would be about 17 per cent.

It must be remembered no elections have yet been held in Flint, Pontiac, Cleveland and Lansing, some of which are claimed to be strongholds of AFL membership. There is also the possibility that the federation is stronger relatively in some of the parts plants.

As previously pointed out in these columns, the ALB election returns do not necessarily measure the federation's power to cause trouble. If they did, the industry would have little to be concerned about. Obviously, by directing its attack at a few key parts or body plants or at key departments in the vehicle plants, which the federation may have been successful in organizing, a serious interruption in production might be brought about.

## ALB Uses New Grouping Plan in Hudson Voting

DETROIT, Jan. 24—A new plan of grouping workers has been adopted for the elections which the ALB will hold at the Hudson plant tomorrow. The new grouping was worked out by Prof. Ross of the board after consultation with Arthur Greer, head of an independent union at Hudson. It provides for men doing similar work to be grouped for the selection of representatives, instead of districting the plant geographically as in previous elections. Mr. Greer's union, the Associated Automobile Workers, is supporting the election in contrast with the negative attitude of the AFL and MESA.

## James A. Holihan

James A. Holihan, 64 years old, died in Detroit, Sunday. One of the pioneers in the automobile radiator industry, he at one time was with the old Briscoe Manufacturing Co. and later owned the Holihan Manufacturing Co., sheet metal workers.

Later Mr. Holihan served as district sales manager for the Hudson Motor Car Co. and the Federal Motor Truck Co., and as sales manager for the Standard Motor Truck Co. More recently he had been associated with his son, Royer J. Holihan, in the latter's advertising agency. In addition to his son, he is survived by a daughter, six sisters and a brother.

## Washington Office for Campbell-Ewald Co.

The Campbell-Ewald Co., Detroit advertising agency, will open a Washington, D. C., office, according to Henry T. Ewald, president. The new office will be under the direction of Robert C. Diserens, a vice-president of the organization who has been associated with Mr. Ewald for a number of years.



Francis H. Fenn, newly appointed general sales manager of Hupp

## Chilton Dealer Roll Call Shows 6% Increase in '34

There were 35,977 passenger car dealers in the United States at the end of 1934, the annual roll call of the Chilton Trade List reveals. The total represents an increase over last year of 1868, or about 6 per cent, and marks the first time the number of dealers has increased since 1929.

The number of dealers handling one line exclusively increased by somewhat more than 3 per cent from 20,965 to 21,659. Dealers handling more than one line totaled 14,316 against 13,164 a year earlier, a gain of 9 per cent. These multiple line dealers provided 31,943 representations against 29,063 at the end of 1933.

Total representations provided by both single and multiple line dealers amounted to 53,602, the 1934 figures show, as compared with 50,028 at the close of the previous year.

The complete analysis of the industry's domestic dealer organization showing representation by makes, by population groups, and the number of single and multiple-line dealers handling each make will be given in the annual Statistical Issue of *Automotive Industries* which will be out Feb. 23.

## Biddle Lauds ALB's Work at Detroit Conference

Commendation of the work of Dr. Wolman's labor board was voiced indirectly at a meeting of 30 federal conciliators from various parts of Michigan by Francis Biddle, chairman of the NLRB, held in Detroit this week.

In recommending that disputes be settled in a practical and empirical manner, rather than on the basis of discussion of the rights of the parties concerned, Mr. Biddle cited the method which has been pursued by ALB in its operations in this area. Mr. Biddle expressed the opinion that much has been done toward the building of goodwill between labor and management in this area during the past year, after conferring with the Federal conciliators.

While Mr. Biddle went to Detroit officially to study the operation of regional

and local labor boards in this area the general impression here is that he came to "get the feel" of the general labor situation and make a study of ALB operations.

## Traffic Men Criticise Inadequate RR Equipment

Failure of railroads during the past year to meet the request of the AMA to equip an adequate supply of box cars with automobile loading devices was a subject of particular concern at a meeting Tuesday of traffic managers of AMA member companies. Shortages of properly equipped cars are expected in the next few months when production most likely will reach high totals. According to J. S. Marvin of the AMA the railroads were asked a year ago to equip 25,000 such cars, but have less than 18,000.

It was pointed out at the meeting that railroads serving automobile plants in the South have been particularly delinquent in keeping their device car equipment up to the requirements. The alternative to shipping by rail will be driving the cars or loading them on trucks.

It was announced that C. R. Scharff, traffic director of Chevrolet, is to have a place on the executive committee of the National Industrial Traffic League; other committee appointments in that organization include K. A. Moore, AMA; R. L. Reese, Buick Motor Co.; C. T. Bradford, International Harvester Co.; D. C. Fenner, Mack Trucks; M. S. Graham, Reo; C. A. Sullivan, Fisher Body, and J. S. Marvin, AMA.



Chicago saw one of the most attractively decorated automobile shows ever staged in that city this week. Official estimates have placed sales this year somewhat ahead of last year. Attendance, however, has been slightly less, but officials are considering continuing the show another week if attendance continues to rise during the latter part of the week. As in New York, the Chicago show this year was staged by the local dealers' association with A. C. Faeh as show manager.

## Olds and Fisher Lansing Plants Close as 46 Sanders Strike for Wage Boost

A strike of 46 sanders at Lansing Fisher Body caused that plant and the Olds Motor Works to close down Thursday morning, throwing approximately 8400 men out of work. Of this total some 5900 were employed by Olds and the remaining 2500 by Fisher.

Distributed over the day and night shifts, the striking sanders had demanded a wage increase to \$1 per hour and a slowing down of the production line. According to George C. Patterson, Fisher plant manager, the men have been receiving 85 cents to 92 cents per hour on a nine hour daily schedule. Mr. Patterson said the men had given only 2½ hours notice prior to walking out Wednesday night, and that he lacked the authority to grant the demands at that time.

A statement from the Associated Automobile Workers of America local in Lansing said their members would be called out at the Olds plant unless the sanders were taken

back and the grievances settled. Several workers' meetings were called Thursday, both day and evening, to discuss what action should be taken to support the striking sanders.

Some of the sanders, it was learned, are AFL members, but apparently the dispute prior to the shut-down lay between the men themselves and the management rather than with the AFL local organization. The local AFL office expressed ignorance of the details of this latest labor disturbance, and AFL headquarters in Detroit also disclaimed having heard of the development when contacted by *Automotive Industries*.

C. L. McCuen, Olds general manager, indicated there was little likelihood of the Olds plant reopening before next week. This shut-down for Olds comes just prior to the start of the February production schedule which is close to the largest, if not the largest, in Olds' history.

# Business in Brief

**Written by the Guaranty Trust Co., New York, exclusively for Automotive Industries**

There was a moderate decline in the volume of retail trade last week; the cold and stormy weather benefited some lines and retarded others. On the other hand, wholesale business continued to improve. Industrial activity thus far during this month has been better than in any similar period in the last four years. The steel mills last week were operating at 49.5 per cent of capacity, and the level of activity increased for the fourteenth successive week. Lumber production was above that last year, and the volume of orders was the largest since last May. Business failures registered the first decline in three weeks.

### Business Index Rises

The Guaranty Trust Company's preliminary index of business activity for December stood at 68.8, as against 65.4 for the preceding month and 63.3 a year ago. The Company's index of wholesale commodity prices on January 15 was 52.8, as against 51.6 a month earlier and 51.9 a year earlier.

### Increased Car Loadings

Railway freight loadings during the week ended January 19 totaled 562,955 cars, which marks an increase of 9280 cars above those during the preceding week, an increase of 1053 cars above those a year ago, and an increase of 64,401 cars above those two years ago.

### Food Prices Move Up

Retail food prices during the two weeks ended January 2, according to the Bureau of Labor Statistics, increased 1.5 per cent, which marks the first advance since September 11, 1934, when the high point for that year was reached. The current index number stands at 115.9, on the basis of the 1913 average as 100, as against 116.8, the high point for 1934.

### Chain Store Sales Gain

Sales of 18 store chains during December were 6.5 per cent above those in the corresponding period in 1933, and were larger than in any other month last year.

### Current Output Greater

Production of electricity by the electric light and power industry in the United States during the week ended January 19 was 9.4 per cent above that in the corresponding period last year.

### Fisher's Index

Professor Fisher's index of wholesale commodity prices for the week ended January 26 stood at 81.6, the highest level since November, 1930, as against 81.1 the week before and 80.7 two weeks before.

### Federal Reserve Statement

The consolidated statement of the Federal Reserve banks for the week ended January 23 showed a decrease of \$8,000,000 in holdings of discounted bills. Holdings of bills bought in the open market and of government securities remained unchanged.

## ICC Reveals RR Publicity Against Motor Transport

Indirectly revealing the extent of railroad propaganda against highway transportation, the Interstate Commerce Commission has analyzed expenditures by Class I railroads for purposes other than construction and physical operations, according to the National Highway Users Conference. The result of this analysis and a rebuke for apparent wastefulness are contained in a report issued by the commission on the basis of replies to a questionnaire it addressed to 145 railroad managements.

Reference is made in the report to "a budget raised by various railroads, shippers and manufacturers for use in connection with regulatory laws on use

of highways by motor carriers." Though the report does not indicate the size of that budget, one railroad is cited as having made payment of \$46,632 to the fund for three years of the period.

The commission's files in the future, according to the Conference, will contain direct evidence of the amount of money spent by the railroads for purposes other than construction and physical operation.

### Auburn Automobile Co.

The Auburn Automobile Company reports a net loss after depreciation, taxes, etc., for the fiscal year ended November 30, 1934, of \$3,642,499 against a loss of \$2,307,973 in the previous fiscal year. During the year dividends of \$223,443 were paid bringing the total deficit for the period to \$3,865,942.

This compares with a deficit in the previous year after dividends of \$3,088,547. Net sales during the 1934 fiscal year amounted to \$10,331,730 against \$5,359,597 in 1933.

The November 30, 1934, balance sheet shows current assets of \$5,681,365 including \$1,114,451 cash, \$1,370,146 receivables and \$3,194,404 inventories. Current liabilities totaled \$649,079, leaving working capital of \$5,032,286. This compares with working capital at the end of the preceding fiscal year of \$7,930,157.

## Wholesale Automotive Code Assessment Forms Mailed

Assessment forms to cover contributions to the operating expenses of the code authority for the Wholesale Automotive Trade have been mailed to parts and equipment manufacturers, chain stores, car manufacturers, etc. Assessments are at the rate of 0.7 per cent on the dollar volume of wholesale sales of automotive merchandise with a minimum of \$15. District agencies of the national code authority are undertaking the collection of similar assessments from car dealers and car distributors, and other local establishments which wholesale automotive merchandise as an incident to their main business.

## Burdening Motor Laws ICC Control Opposed

**Live Stock Group Hits Act Aiding RRs; Grange For Uniform Size, Weight**

The National Grange, according to the A.M.A., has recommended in their 1935 legislative program the adoption of uniform restrictions covering the size, weight and speed of all motor vehicles and that these restrictions be reciprocal among the states, and urges that these restrictions follow the Uniform Code for the Regulation of Traffic as approved by the American Association of State Highway Officials and the United States Bureau of Public Roads.

At the same time the Grange said: "We oppose placing water and motor transportation in interstate and foreign commerce under the jurisdiction of the Interstate Commerce Commission, the sole function of which has been to regulate the railroads."

Opposition to further legislation which would "saddle an additional burden on highway transportation for the benefit of the railroads" was expressed by the American National Live Stock Association in a resolution passed at the association's annual meeting in Rapid City, S. D. The association charged in its resolution that the railroads fixed rates at what they thought the traffic would bear without regard to costs. It also said that highway transportation has given the public materially lower rates, fares and charges, and in some instances service superior to that of the railroads.

## "Anywhere for Hire" Trucks Largest Group

**Partial Tabulation Shows  
185,312 Registrations;  
Some Fleet Totals Not In**

Preliminary partial tabulations of for-hire operators registering with the Trucking Industry code authority, indicate that the largest group is the "anywhere for hire" classification. A total of 135,536 registrants operating 185,312 vehicles are covered in the analysis. Due to tabulating difficulties, these totals do not include as large a proportion of fleet owners as the final figures will incorporate. It is anticipated that the inclusion of these fleet owners will expand the common and contract carrier, and cartage classifications.

The information now available for the country as a whole follows:

	Registrations	Vehicles
Regular route common carriers .....	5,062	8,858
Irregular route common carriers .....	15,794	20,898
Commodity carriers .....	5,099	6,005
Contract carriers .....	26,007	37,031
Anywhere for hire .....	50,826	59,616
Local cartage .....	20,996	26,592
Misc. .....	11,752	26,312
Total .....	135,536	185,312

Work on the complete tabulations of registrations is being rushed and it will show among other things the number of interstate operators. However, in view of the large number of operators already tabulated, the final figures are not expected to show any significant changes in the proportions of the various classifications.

## BUYmanship-Plus Plans Are Formulated at Meeting

Plans for carrying on the BUYmanship-Plus Plan, endorsed by the MEWA, by the Automotive Distributors, Inc., have been perfected by the executive committee of that organization. It is reported there is a constantly growing interest in the plan resulting in an increase of membership in the organization.

Members of the executive committee of Automotive Distributors, Inc., are: H. M. Dine, Canton; T. C. Thompson, Waterloo; R. C. Sparks, Champaign, Ill.; H. R. Rosen, Providence; E. T. Satchell, Allentown, Pa.

## Many Air Mishaps Laid to Carburetor Ice by U.S.

Investigations of air-line accidents and forced landings by the Bureau of Air Commerce have revealed that carburetor icing is still the major cause of aircraft-engine trouble. During 1934, passenger-carrying airplanes were forced down in 26 cases because of ice in the carburetors. In a memorandum to airline operators the Bureau of Air Commerce points out that these facts undoubtedly indicate inadequate heating of carburetors when aircraft enter moisture-laden air at freezing temperatures or below.



**K. T. Keller, Dodge Bros. president, who has been elected president of the Detroit Athletic Club**

Tests by the National Bureau of Standards show that there is a reduction in the temperature of air as much as 52 deg. Fahr. at the venturi, due to rarefaction of the air stream and the rapid evaporation of the gasoline which creates a "snow storm" above the venturi that may clog the manifolds.

One emergency method of clearing out ice is by backfiring the engines. Although some operators have frowned upon this practice, the Bureau believes that until better heating systems are provided this means should be used.

The Bureau has asked operators to investigate their own situations and if it is not found possible to obtain adequate carburetor heating it will be necessary for the Bureau to restrict flying when conditions become favorable to the formation of carburetor ice.

## 54,000,000 Franc Fund For Citroen Aid Reported

Financial aid amounting to 54,000,000 francs will be supplied the bankrupt Citroen organization enabling it to resume normal production, according to an Associated Press dispatch from Paris. The fund will be made in the form of short term loans.

The Bank of France, it is reported, is expected to supply 15,000,000 francs; the Michelin Tire Co., one of the largest creditors, 8,000,000, and the balance will come from various other banks and private persons. Under the terms of the reported assistance it is said M. Citroen will relinquish control of the company to a committee headed by Pierre Michelin, who will remain with the company as technical adviser.

## Constitutional Rights Assured Under Codes

**Executive Order Issued  
by President to Remove  
Doubts of Code Signers**

Neither the Government nor any member of industry waives any constitutional right pertaining to the Government or to any individual by approving, assenting to or cooperating under a code of fair competition, President Roosevelt has declared in an executive order on this subject. By his order Mr. Roosevelt sought to clarify any misunderstanding which may arise on this point inasmuch as some codes contain a specific clause asserting no such waiver of rights is involved, while other codes lack such a stipulation.

The Automobile Manufacturing Code and the Motor Vehicle Retailing Code contain no qualifying clause of any kind in this regard. However, the APEM and the wholesale code contain the following provision: "No member of this code shall be held to have consented to any modification thereof or to any provision or interpretation of the National Industrial Recovery Act if declared unconstitutional by the Supreme Court of the United States."

## Judge Criticizes Willys Election by Stockholders

David R. Wilson, receiver for the Willys-Overland Co., has been made permanent trustee of Willys-Overland, Inc., sales subsidiary, to work out a reorganization program under Section 77-B of the new federal bankruptcy act.

Judge George P. Hahn in Federal Court criticized action of preferred stockholders in taking control of the company and electing John N. Willys president.

The court said it has had close contact with the problems of the receivership for two years and meant to continue the supervision. He overruled objections raised by the Hydeborn Corp., as a creditor of Willys-Overland, Inc., to the proposed reorganization move. Attorneys for creditors and reorganization groups argued that all the subsidiary corporations should be included in any general reorganization of the company.

## 1934 Dollar Volume Gained 33% Over '33

The Bureau of Foreign and Domestic Commerce reports retail sales of new passenger cars for 1934 were 33 per cent larger in dollar value than for the previous year. December sales were 57 per cent above those of the corresponding month of 1933, and 40.4 per cent greater than December, 1932.

## Glass Strikes Threaten Production as Negotiators Seek a Compromise

Strikes which closed plants of the Pittsburgh Plate Glass Co. and threatened walk-outs at the plants of the Libby-Owens Ford Co. appeared as black clouds on the automotive horizon this week. However, as this issue goes to press, it is felt that the chances are good for an early settlement.

Cessation of operations at the LOF plants has been averted, at least temporarily, by negotiations which are still being carried on as this is written (Thursday, A. M.). Negotiations between Pittsburgh Plate and the union are also reported to be under way today. These negotiations came after joint conferences held in Cleveland last week which were followed by strikes in the Pittsburgh plate glass plants when demands for wage increases and the check-off system of collecting union dues were refused by both companies.

When the joint conferences broke up, it is understood that it was suggested that negotiations be continued in separate conferences in Toledo to see what could be done to negotiate a compromise, the company agreeing to adjust wage discrepancies. This proposal was accepted and averted a strike at the LOF plants. Those in touch with the LOF situation feel that the company will not yield on the check-off, but that wage adjustments may clear up the dispute.

Since the automotive industry is very largely dependent on these two companies for its glass supplies and inventories at the motor car plants are believed to be inadequate to permit continuation of big-scale production for more than a week or so, the effect of a prolonged interruption in glass shipment is obvious. The situation is complicated further by the fact that it takes a considerable period of time to get glass furnaces into operation after a shut-down due to the necessity for relining. It is understood, however, that so far Pittsburgh Plate has been able to keep its furnaces in operation.

The whole situation is regarded by some automotive executives as possibly a move on the part of the AFL to put it in a strategic position in connection with its attacks on the automobile manufacturing code and the President's settlement. The possibility and potentialities of such tactics were forecast several weeks ago in *Automotive Industries*.

Average wages for the 6200 men and women employees of LOF is now 71 cents an hour. Most of the workers are getting the same wages for six hours they formerly received for eight hours. Wage costs of the company are said to have jumped 47 per

cent as a result of the restoration of one of the 10 per cent depression pay cuts and the switch to shorter hours.

Union leaders in Toledo have told LOF employees that a strike would play into the hands of a competitor and bring both managements into a battle to crush the union.

Both LOF and Pittsburgh Plate signed agreements some time ago with the Federation of Flat Glass Workers, a new vertical union, to run for a year ending Nov. 1, 1935. These were not closed-shop contracts, but they covered wage scales, working conditions, hours, etc.

Last week's conferences were held to consider modifications of these agreements, the unions demanding a flat increase of 20 cents an hour, the check-off and six other minor working condition changes. The union claims 2800 members in the two Toledo LOF plants, but it is understood that the company believes that 1000 is nearer correct. Incidentally, it is reported that LOF has reopened its Charleston, W. Va., plant to make an order of 30 carloads of window glass for manufacture in safety glass by the Ford Motor Co.

### Senatorial Investigation of Motor Industry Sought

Senator Lewis B. Schwellenbach, Dem., Washington, introduced in the Senate this week a resolution calling for an investigation of the automotive industry's labor policies.

Senator Schwellenbach's resolution would authorize the Senate's committee on labor to make the investigation and determine whether the employers had violated Section 7a of the Recovery Act; whether workers had been coerced by employers into joining so-called company unions; whether the companies have supported espionage systems, and whether employees have been intimidated against joining outside independent unions.

### C. Raymond Cunliffe

C. Raymond Cunliffe, head of the Cunliffe-Cadillac Co., distributors of Cadillac and Oldsmobile cars in Baltimore, died of pneumonia in that city on Jan. 26, and was buried in West Laurel Hill Cemetery, Philadelphia, on Jan. 30. He was 56 years old.

"Ray" Cunliffe was widely known throughout the trade, left an executive position with Armour and Co., in 1912,

to join the Philadelphia branch of the Ford Motor Co., and then went with the Automobile Sales Corp., later known as Neel-Cadillac Co. in Philadelphia, where he became sales manager. He was chosen to organize the Cadillac branch in Chicago as general manager, in 1918, and left that post in 1921 to become general sales manager at the Peerless factory. He later took over the Peerless account in Philadelphia. For the last six years he had conducted his own business in Baltimore. He is survived by his widow, who was Mary Freas, of Philadelphia, and five children.

### Smith, MESA HEAD, Hits Bargaining Councils Plan

Proposals for the formation of a national automobile employees association, composed of members of the bargaining councils elected under ALB rules, first voiced last week by Elmer H. Gustafson, chairman of the Cadillac Motor Car Co. bargaining council, was attacked this week from another source in a statement issued by Matthew Smith, general secretary of the MESA.

As in the case of the A. F. of L. attack last week, Mr. Smith claimed that the organization proposal is being backed by employers and referred to it as a glorified company union. Mr. Smith also threatened the calling of strikes by the MESA unless changes in the present conciliation methods are made. However, not much concern is being felt over the Smith threats, inasmuch as any strike action by the MESA can only be troublesome at the new model period and moreover his organization is believed to have lost considerable strength in the last year.

### LaGuardia Wants Buses to Replace Street Cars in N. Y.

Buses will entirely replace street cars on Manhattan Island within a year, if Mayor LaGuardia has his way. In a radio address this week, the mayor said:

"Within one year there should not be a single trolley line left in the Borough of Manhattan, except the Third Avenue System, and I hope that this company will see the light soon, as it has with respect to parts of its Bronx lines."

On Friday buses replaced the Madison Avenue car line and during the year the new bus system will put many cross town lines into operation.

### 1934 Exports Increased 110% Over 1933

February 2, 1935

	Dec., 1934		Dec., 1933		12 Mos., 1934		12 Mos., 1933	
	No.	Value	No.	Value	No.	Value	No.	Value
Motor vehicles, parts and accessories ....	...	\$12,410,000	...	\$9,307,000	...	\$190,208,000	...	\$90,631,000
Motor trucks and buses .....	7,141	3,734,000	6,460	2,897,000	92,723	44,207,000	43,616	20,113,000
Passenger cars and chassis .....	8,279	3,893,000	3,066	1,802,000	145,157	78,258,000	64,511	32,100,000

Automotive Industries

# Studebaker Reorganization Plan Given U. S. Court OK, Releasing New Capital

Federal Judge Thomas W. Slick, Monday afternoon, in United States District Court in session at Fort Wayne, gave approval to the Studebaker corporation reorganization plan after a three-day hearing. This marks the first major financing by private capital under the new bankruptcy act and the first survival of receivership by a major automobile company.

The decision means the reorganization of the company and settlement of its debts, and the releasing of \$5,500,000 new money as working capital which will put the corporation in a strong financial position. The machinery for putting the reorganization into operation will be started immediately by the executives of the company and their associated financiers.

Attorneys for the opponents of the plan claiming to represent about 2 per cent of the common stock stated they would file appeal to the Federal Circuit Court of Appeals in Chicago. They charge that the plan discriminates against the common stock holders and that it does not satisfy the requirements of the bankruptcy law.

The plan was supported by 75 per cent of the \$20,000,000 debt. Thirty days is required under the federal corporate reorganization act in which appeal may be made from the court's decision. By ruling the debtor corporations insolvent Judge Slick removed what has been considered by attorneys as the greatest obstacle in the path of reorganization. Had objectors succeeded in their efforts to show that the Studebaker and Rockne corporations were solvent the reorganization must then have had the acceptance of the majority of 40,000 stockholders before being confirmed by the court.

Through the reorganization the Studebaker corporation will be able to eliminate as such its present funded and other debt amounting with accrued interest to more than \$23,000,000. According to qualified witnesses who testified during the hearing, the Studebaker corporation has an efficient dealer organization and a plant equipped to manufacture automobiles on a competitive basis, but until now has lacked sufficient working capital. The underwriters who will supply the \$5,500,000 to restore the corporation to solvency are: Lehman Brothers; Goldman, Sachs Co.; and Hayden, Stone and Co., New York, and Field, Glore and Co., Chicago.

Studebaker survival is attributed largely to the fact that the first act of receivers, Paul G. Hoffman and Harold S. Vance, was to initiate a vigorous advertising campaign, designed to maintain dealer morale and increase retail sales volume. So successful was this aggressive merchandising that Studebaker made an operating profit in the receivership period of 1933 and in 1934 Studebaker ranked eighth in new car regis-

trations, being outsold by only one make of comparable price.

Debts of the old corporation and the Rockne motors amounting to more than \$23,000,000 will be paid with \$225,911 cash plus 532,000 shares of stock in the White Motor company owned by Studebaker, plus 805,841 shares of stock in the new corporation. This new corporation will start life with plant and equipment adjusted to a 1935 valuation of \$15,400,000 with more than \$7,000,000 cash as against current liabilities of \$3,000,000. There will be \$7,000,000 in six per cent 10 year debentures. Common stockholders, like preferred, were considered by Judge Slick to have no equity left as assets of the corporation were not sufficient to pay the creditors. They are, however, offered the right to subscribe to the new debentures in the proportion of \$2.25 of debentures for \$2.25 cash receiving as a bonus one-third of a share on new common with such purchase, the same ratio as offered the preferred stockholders.

It will take some time to move the new setup to the point where the actual mechanical effects of the new company will be perceptible in the huge plant, but that is expected to follow immediately after the financial reorganization is made effective.

Under the reorganization Paul G. Hoffman will become president in direct charge of sales; Harold S. Vance, chairman of the board of directors, in direct charge of production; and A. G. Bean, chairman of the board of directors of White Motor corporation. All three were receivers of the old corporation and later trustees until the time of reorganization.

## Wilfred O. Floing

Wilfred O. Floing died Monday, Jan. 28, at Harper Hospital, Detroit, following an operation.

At the time of his death, Mr. Floing was art director for D. P. Brother & Company, Inc., of Detroit. Previously he had been with Campbell-Ewald Co. of Detroit.

## Aviation Commission For Board Air Control Policy

Broad recommendations of vital importance to the aircraft industry are made in a 254-page report to the President released by the Federal Aviation Commission Thursday.

Among the recommendations made are the following:

Creation of a non-partisan Air Commerce Commission which may be merged by executive order with any agency created subsequently to regulate all forms of interstate transportation.

Construction of a naval training airship.

Where conditions made it desirable, responsible government officials should be

empowered to purchase without competitive bidding.

Encouragement by the government of patent cross-licensing.

Increased research work.

Encouragement of aircraft exports.

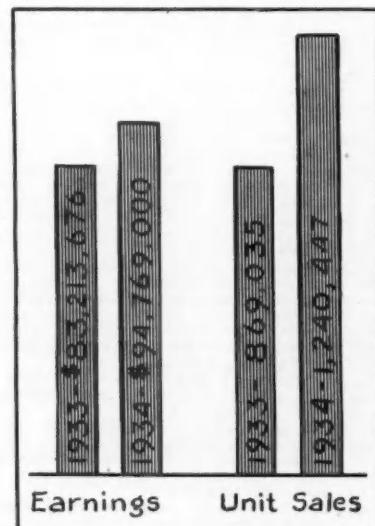
Measurement by government of performance characteristics of new type aircraft.

The report is based on the Commission's investigations which have been under way since its appointment last June.

## GM '34 Sales Up 43%; Profits Gained 14%

GM's preliminary report on 1934 operations puts its earnings for the year at \$94,769,000 as compared with \$83,213,676 in the previous year. The increase approximates 14 per cent as compared with a 43 per cent gain in sales of vehicles produced by the corporation.

Ordinarily profits may be expected to increase faster than volume, but the reverse was true last year in the case of



General Motors' 1933 and 1934 earnings and sales

General Motors due to rising costs which could not be offset by price increases because of the intensity of competition.

Earnings on the common, after preferred dividends, amounted to \$1.99 against \$1.72 in 1933.

Fourth quarter earnings amounted to \$2,323,659 as compared with \$1,803,882 in the corresponding quarter of the previous year.

Preliminary consolidated balance sheet data place cash and securities at \$186,500,000 on Dec. 31, 1934, compared with \$177,303,966 a year earlier. Net working capital at the year end was \$275,500,000 against \$243,832,896 at the end of the previous year.

## APEM Code Amendment Redefines "Industry"

**Discuss Proposed Change at Public Hearing in Washington, Feb. 27**

The APEM has submitted an amendment to its code redefining the kinds of manufacturing which are subject to its provisions. A public hearing on the amendment and its effects on other coded industries will be held in Washington, Feb. 27.

**The amendment follows:**

The term "Industry," as used herein, is defined to mean the business of the production and/or manufacture and/or the sale as a manufacturer of automotive parts and/or equipment including, but without limitation, the following:

(1) Original Equipment—Automotive parts and/or equipment sold to any manufacturer and included by him as standard or optional equipment in his own finished product excepting, however,

- (a) Rough castings and/or rough forgings of any material.
- (b) Rubber tires and tubes.
- (c) Electrical storage and wet primary batteries.
- (d) Brake lining.
- (e) Anti-friction bearings.

(2) Accessories—Automotive parts and/or equipment not usually included by the manufacturer as standard equipment.

(3) Replacement Parts—Automotive parts used as replacement for original equipment and/or accessories as defined in paragraphs (1) and (2).

(4) Automotive Shop Equipment—Machine tools and apparatus designed for and used in the maintenance and/or repair of a motor, industrial, marine or aircraft vehicle or internal combustion engine and usually sold for use in reconditioning same, air compressors of ten (10) horse power and under for every purpose and excepting electric tools not exclusively applicable to motor car and internal combustion engine repair and/or recondition.

(5) Automotive Service Tools—Small hand tools designed especially for use with shop equipment tools or apparatus as defined in paragraph (4) above or in the maintenance, repair or adjustment of a motor, industrial, marine or aircraft vehicle or internal combustion engine.

(6) Automotive Electrical Products—Electrical products as defined in paragraphs (1), (2), (3), above.

(7) Internal Combustion Engines—Internal combustion engines and such other allied products as are natural affiliates and/or parts thereof except

- (a) Aircraft engines.
- (b) Marine Diesel engines and Diesel engines for rail cars and locomotives.
- (c) Slow speed stationary engines of the oil well pumping type operating outside the speed range of the gasoline engines produced by the members of this division.
- (d) Slow and medium speed horizontal and vertical gas engines operating outside the speed range of the gasoline engines produced by the members of this division.

The above definition includes all operations of a member of this "Industry" in the manufacture of parts for his own finished products whether or not covered by the definition of any code or codes which have been approved by the President or which may be so approved; and providing further that this definition shall not include any products hereinabove described which

(1) are manufactured by a member of the Automobile Manufacturing Industry for use in his own finished product, and

(2) are not especially designed for and used mainly as automotive parts and/or equipment.

The original paragraph read: "The term 'Industry' as used herein is defined to mean the business of the production and/or manufacture of automotive parts and/or equipment, consisting of automotive original equipment, automotive replacement parts, automotive accessories, automotive shop equipment, automotive service tools, automotive chemical specialties, automotive electrical products, internal combustion engines, excepting aircraft engines, such other allied products as are natural affiliates, including industrial, marine, and aircraft parts, units, and/or equipment, which are or have parts kindred to this automotive parts and/or equipment. Industry, excepting, however, the production and/or manufacture of such articles when produced or manufactured by a manufacturer for use exclusively in his own finished product, and excepting the business of manufacturing and/or producing rubber tires and tubes and other rubber products included in the Code or Codes of Fair Competition for the Rubber Industry, and excepting the products included in the Code of Fair Competition for the Electric Storage and Wet Primary Battery Industry."

## N. Y. and 13 Legislatures Ask Repeal of 1¢ Gas Tax

The New York legislature, the legislatures of 13 other states and 86 organizations in all parts of the country have called upon Congress to repeal the federal tax of one cent per gallon on gasoline, according to the American Petroleum Institute. Congress is asked to leave this form of taxation solely to the individual states.

State legislatures which had previously memorialized Congress on this subject are: Arkansas, Florida, Michigan, Mississippi, Montana, Nevada, New Jersey, North Carolina, Ohio, Oklahoma, Oregon and South Dakota. The Massachusetts House of Representative also passed a similar resolution.

## Quick Truce Ends Strike at Myers Regulator Co.

A strike of automotive parts workers at the plant of the Myers Regulator Co., Toledo, making window regulators for Chrysler and some other manufacturers, was cut short Saturday when workers agreed to return pending settlement of grievances. The walkout came Friday morning when it was charged five men were dismissed for union activities in the plant. They will be restored to jobs.

B. V. Eastman, of the Chrysler executive staff, entered the conferences late Saturday with an ultimatum that Chrysler would move certain tools and dies which it owns from the Myers plant by truck Monday to Detroit if some truce was not forthcoming.

Union members approved a temporary settlement made under auspices of the sub-regional labor board.

Samuel B. Solomon, president of Myers Regulator, said the walkout and truce had clarified several issues long brewing.

## Perfect Circle's 1934 Volume a Record Breaker

Increased production of motor vehicles and purchase of replacement parts for vehicles already in operation during 1934 produced a manufacturing and sales volume of 57,788,000 piston rings for the Perfect Circle Company, breaking all previous records, according to a statement made public by that organization. The company also reports its 1934 business on piston expanders was 71 per cent ahead of the volume done in 1933.

## Toledo Steel Products Gets Case Valve Order

The contract to supply valves on the 1935 production of J. I. Case Tractors has again been awarded to The Toledo Steel Products Company, according to J. E. Adams, sales manager of the company.

## CALENDAR OF COMING EVENTS

### SHOWS

Omaha Automobile Show.....	Feb. 3-9
Wilmington, Del., Automobile Show,	Feb. 3-9
Kansas City, Mo. Automobile Show	Feb. 9-16
Denver, Colo. Automobile Show..	Feb. 10-23
Peoria, Ill., Automobile Show....	Feb. 13-17
Bethlehem, Pa., Automobile Show.	Feb. 18-23
Evansville, Ind. Automobile Show.	Feb. 23-27
Des Moines Automobile Show	Feb. 25-Mar. 2

Minneapolis Automobile Show....Mar. 9-16  
Mankato, Minn. Automobile Show Mar. 16-23

### ANNUAL MEETINGS

U. S. Chamber of Commerce Annual Meeting, Washington, D. C...Apr. 29-May 2  
5th Annual Automotive Maintenance Meeting, Philadelphia .....March 5-8

### CONVENTIONS

Lafayette, Ind. (Purdue University),  
Automotive Service Conference, Mar. 21-22

# JUST AMONG OURSELVES

## What Is a Bona Fide Union?

**W**HAT is a bona fide labor organization? The Wagner social insurance bill does not say yet it provides that unemployment benefits shall not be denied because an unemployed person refuses to accept a job conditioned on his joining a company union or which would "interfere with his joining or retaining membership in any bona fide labor organization."

This section would be fairer and easier to administer if all reference to company unions was eliminated and it was made to read simply that no unemployed person should be denied benefits because he refuses a job conditioned on his joining any labor organization, or which would interfere with his joining or retaining membership in any such organization. This language would protect the worker against coercion from any source, but of course union leaders don't want protection to be quite so comprehensive. It might cramp their style.

\* \* \*

## Future of NRA and The Dealer's Code

**T**HE National Industrial Recovery Act will be extended without material change, we were told recently by a Wash-

ingtonian whose opinion on such matters we value highly. He believes that the present Act is so broad in its terms that the President can attain any objective he desires by changing his administrative policy just as well as if changes were written into the law, and by keeping such revisions out of the law the President retains his freedom of action.

The U. S. Chamber of Commerce also feels that the Act will be extended without major alteration, saying in the current issue of its Washington Review: "Legislation to replace or modify the existing Industrial Recovery Act is under consideration, but the present indications are that the Act may be continued in virtually its present form for another year."

That there will be changes in NRA policy, particularly on price-fixing and production control, appears almost certain. However, there is considerable feeling that they will be made on the basis of the conditions in the individual industry or trade, rather than as blanket orders.

In line with this view, our Washington friend holds that the marketing rules of the dealer code have a good chance of surviving, although they provide a form of price control. In this connection, however, he considers as ill-advised the moves that are being made to revise the formula employed to value used cars so that the guide book figures would be lower.

## Highway Lighting Cuts Accidents

**H**EADLAMPS we will always have, but they are subject to limitations that raise doubts as to whether progress will ever make them provide entirely satisfactory driving light. At least there are many who hold this opinion and who believe that highway lighting on main routes is the ultimate answer to safe driving after dark. In support of this viewpoint, some impressive accident statistics were presented recently before the Highway Research Board by Arnold H. Vey, traffic engineer of the State of New Jersey.

On a lighted stretch of the main highway between New York and Philadelphia, the number of night accidents per million vehicle miles was 15.8 per cent less than the day accidents. On three unlighted sections of the same highway, on the other hand, night accidents per million vehicle miles were respectively 318, 322 and 171 per cent greater than day accidents. Recognizing that other factors besides illumination may have been partially responsible for the large differences, the statistics nevertheless are impressive.

\* \* \*

## Show Attendance

**R**EPORTS on attendance at automobile shows in different parts of the country indicate that in general where some form of entertainment was provided, the gate ran ahead of last year, while where a display of the new cars was the sole attraction, the number of paying guests was not quite as large as last year.

—The Editors

# The STOUT SCARAB—

A CAR that represents a sharp departure from current practice in automobile design has been introduced on the market by the Stout Engineering Laboratories of Dearborn, Mich. The Scarab, as the new car is called, is exceptionally smooth in exterior form, being without running boards, separate headlamps and other excrescences, and its over-all length is no greater than that of the conventional low-priced cars of today. It is not streamlined in the usual sense of the word; that is, it was not shaped to give the absolute minimum of air resistance in the direction of travel; what was aimed at, rather, was positive steering and maximum stability regardless of the direction and force of the wind.

The body of the car is a beetle-shaped structure built up on a frame made of alloy-steel tubing. While the car weighs somewhat less than conventional popular-priced models, it is much more roomy, the passenger space being both longer and wider, extending laterally past the road wheels. The over-all height is about the same as that of conventional cars, but the headroom is said to be 5 in. more, so the interior dimensions are greater in every direction.

The engine is mounted at the rear and drives to the rear axle. It is a V-eight engine of 100 hp., which occupies comparatively little room—as much as the usual rear trunk, in the words of the manufacturer. The

usual engine compartment at the front is missing and the windshield is located directly over the front axle. Front seats are independent; the driver's seat, although fastened to the floor, is adjustable in all directions; the passenger seat adjacent to it is not even fastened to the floor, hence can be turned in any direction the passenger may desire. Opposite the rear door and just ahead of the rear wheels is a transverse wide seat, behind the high back of which there is a shelf for coats, hats, etc. In the space between the wide rear seat and the two front seats there are two more loose, upholstered chairs which can be turned in any direction. Forward of the rear seat is a folding table fitting into the wall. All of the

side windows slope considerably, which has the advantage that at night there is no annoyance from reflected lights.

Another feature of the interior arrangements is that the wide rear seat may be moved from its regular position parallel with one of the side walls, where, in combination with an extension folding out of the wall, it forms a comfortable couch.

The controls on the car are arranged in the usual way. Power brakes are fitted. The suspension is by coiled springs with oil-type shock absorbers—an arrangement similar to that employed on the landing gears of airplanes.



There are no running boards  
and only one door

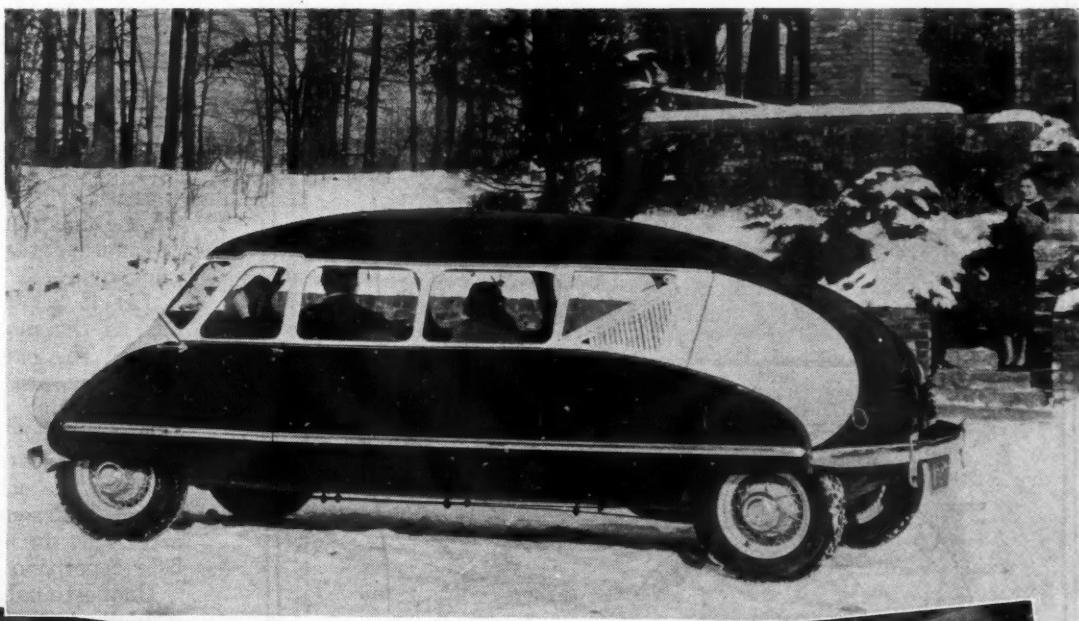


They are playing rummy apparently but one of the movable chairs can be drawn up to the table for a bridge foursome

**A rear-engined job having unusual riding qualities, and providing more body room than conventional designs with no increase in size and with a reduction in weight**

The Scarab—the structure encloses everything but brake cables, wheels and bumpers

Looking forward from the rear seat of the Scarab. Seating accommodations include three movable chairs



Mechanical specifications of the Stout car are not available for publication at this time, one reason being that several options are offered on powerplant arrangement and installation. It is emphasized that the structural design of the body was made possible only by developments in the aircraft field with which Mr. Stout has been closely associated in the past through his connection with

the Stout Metal Airplane Co. and the Ford aircraft factory.

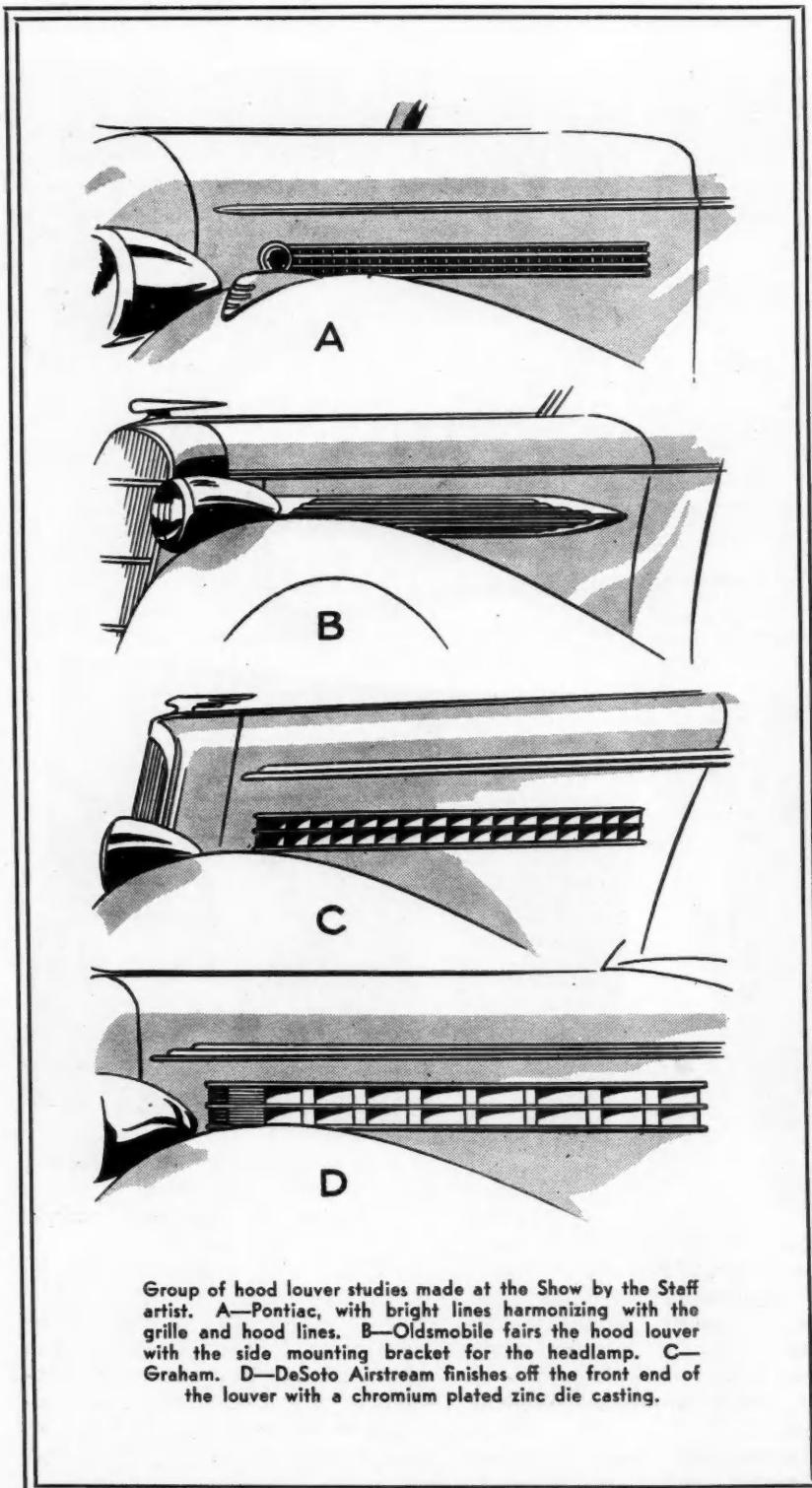
The suspension, which is independent all around, is unusual in that the points of support of the body are higher than its center of gravity, which minimizes swaying on turns.

An outstanding feature of the car is its excellent riding quality on all

Looking backward with the rear seat cushion moved to form a couch for the tired business man

kinds of roads. One of the staff of *Automotive Industries* who had a ride in it says that one is not conscious of the absence of a front engine compartment and hood, even when riding in one of the front seats.

# One Basic Pattern Dominant



Group of hood louver studies made at the Show by the Staff artist. A—Pontiac, with bright lines harmonizing with the grille and hood lines. B—Oldsmobile fairs the hood louver with the side mounting bracket for the headlamp. C—Graham. D—DeSoto Airstream finishes off the front end of the louver with a chromium plated zinc die casting.

**J**UST as several shows back, the automotive industry rode in on the snow plow front suggested by Packard, so this year at the New York Show, body styling on the whole showed the unmistakable influence of the LaSalle of last season while hood louvers followed the lead of Pontiac.

This molding to a common trend is a periodic experience and, as on occasion in the past, it may presage a drastic shift in styling on the part of one make or another in an effort to capture the imagination of the car buyer.

Let it be said, however, that so far as the motoring public is concerned the cars of 1935 taken individually are the handsomest and most striking in the history of the industry—and that's only faint praise. Moreover, although the mold is quite the same, practically every make has some interesting characteristics in body styling that will bear repetition at this time.

Unquestionably the term "streamlining" has been a "buy-word" rather than anything else when viewed from a strictly scientific perspective. Yet the ideal conception of streamlining has taken root deeply in the thinking of designers as is evidenced by the suave tailoring of sheet metal and the closer attention to the details of metal fairing as well as the general refinement in external styling and interior decoration. Of course there still remain some contradictions. For example, although most exteriors have been beautifully cleaned up by housing the spare tire and its attachments within the sloping back panel, some models still retain external mounting of spares and several jobs with luggage compartments offer fender well fountings as optional equipment.

Another perhaps small point is the matter of headlamps. Careful experimental work in France by M. Andreau, as chronicled recently in *Automotive Industries*, has shown that more can be accomplished by way of reducing air resistance simply by rendering the lamps inconspicuous than by any other ready

# in 1935 Car Styling

By JOSEPH GESCHELIN

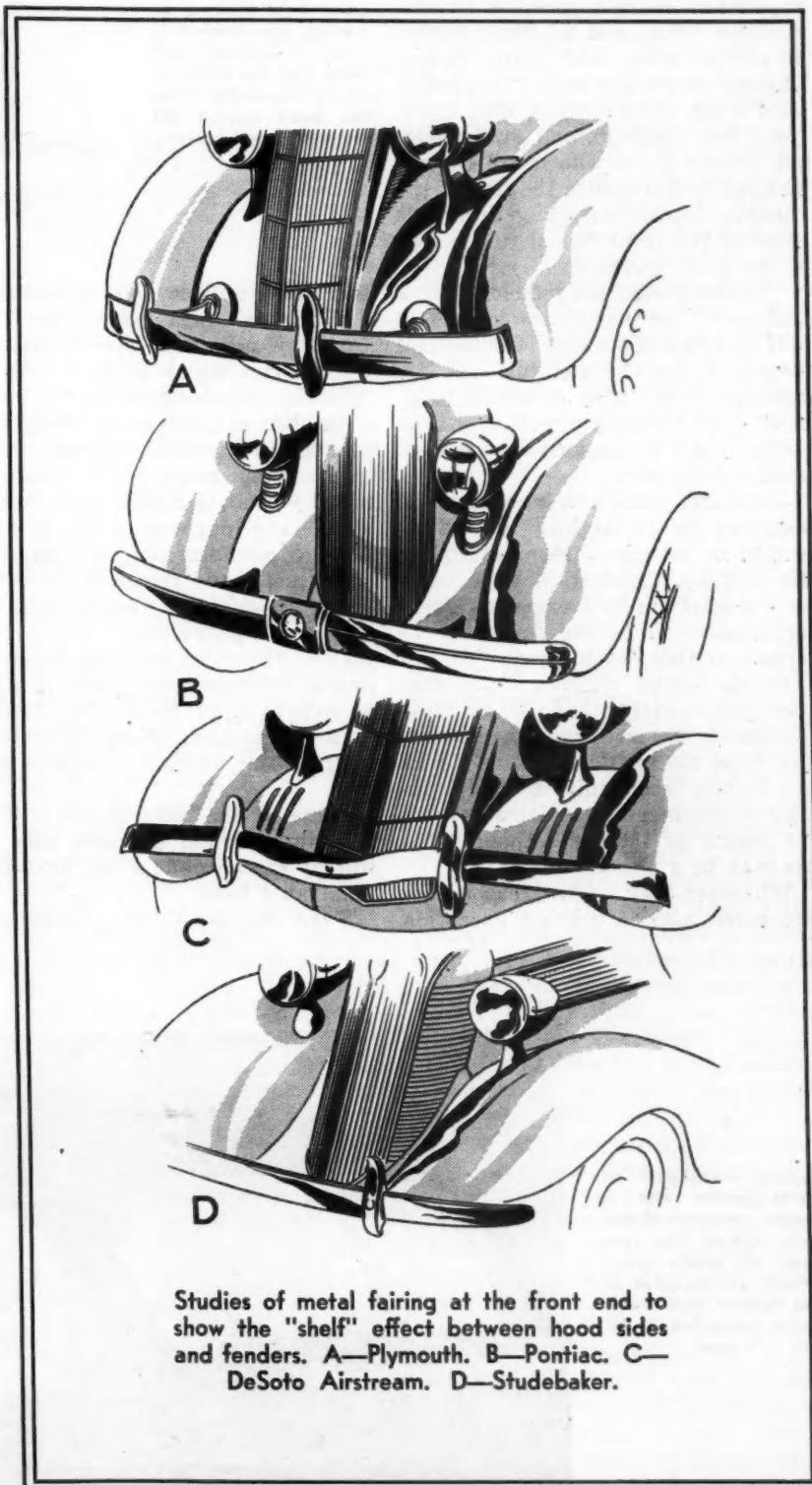
Engineering Editor, Automotive Industries

means. M. Andreau has recommended that the lamps be entirely flush with the front section as on Chrysler Airflow models or at least that they be made as close to drum shape as possible. His theory is that the air stream flows over the hood and spills down the sides and that consequently the longer the lamp the greater the resistance to this flow. Yet invariably the lamp bodies on the 1935 cars are longer than ever before due in part to an effort at harmonizing lamp contour with the body lines.

In general, body styling this season encompasses the following essentials: high narrow front radiators with deeper shells, deeply crowned and skirted fenders, sharply sloped back panels with longer tail sections including the rear fenders. Redistribution of weight which has carried the radiator further front permits of better tailoring of sheet metal and this is reflected in the cleaner and more finished appearance at the front end.

Studebaker was perhaps the first in recent years to appreciate the need for fairing the body in both the horizontal and vertical sections, this being a feature of the line brought out in 1933 and culminating in the Land Cruiser at the 1934 show. This year most bodies are rounded and tapered through the vertical section normal to the longitudinal axis of the body.

It seems to us that the most distinctive body development of the year is the introduction of the steel roof, so much talked about during the past few years. On the Chevrolet, Pontiac, and Oldsmobile the roof is a single stamping extending from the windshield head, around the back, including the rear window and forming the upper flange for the luggage compartment. It extends the full width of the body including the drip molding, thus giving for the first time a unit body structure not only from the viewpoint of physical strength but also in outward appearance. A steel roof also is featured on Hudson and Terraplane but inasmuch as it replaces the soft section in the conventional manner, there still is a slight discontinuity to the



Studies of metal fairing at the front end to show the "shelf" effect between hood sides and fenders. A—Plymouth. B—Pontiac. C—DeSoto Airstream. D—Studebaker.

eye due to the wide rubber molding strip which follows around the roof joint.

As a welcome break from the depression cycle, color returns to the automobile body in much more pleasing and harmonious combinations.

And as a companion to color we find a strong tendency to chromium finish on exterior trim, which proves the fallibility of the trends. Chromium plate, of course, continues on such parts as bumpers, hub caps, ornaments, and hardware. But it appears on more windshield frames, radiator trim, and at least several all-plated horn and lamp bodies. Chrome strips are used to embellish hood lines, hood louvers, etc. Chevrolet, Reo, Graham, and Studebaker, are among those who use a chrome molding to harmonize the line at the running board extending from the front of the front fender to the rear of the rear fender.

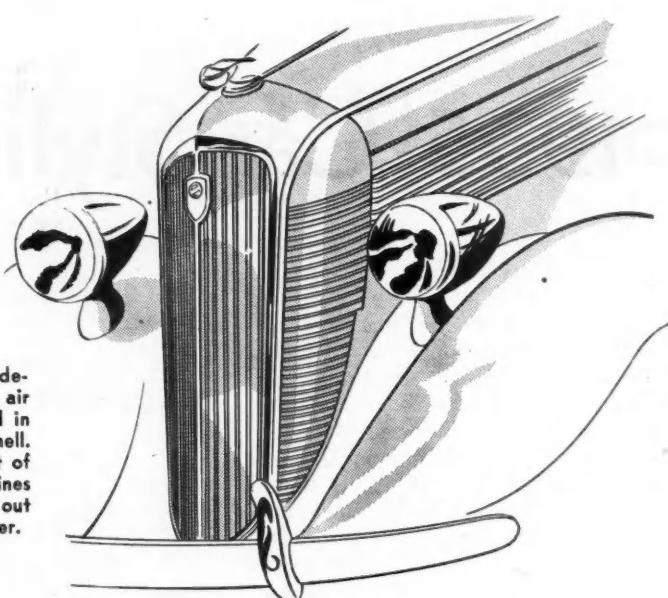
Chrome plated body molding is a feature of the Airstream models as well as of the Cadillacs. On General Motors bodies the moldings are die castings of zinc alloy of which Ternstedt should be very proud since they probably are the longest die castings produced to date.

Ford has struck a new note in body hardware styling on deluxe models in the use of aluminum alloy die castings finished in dull colors by a special anodic treatment. Doehler appears to be the foremost exponent of this development.

In our humble opinion, ornamentation particularly that of radiator ornaments deserves more consideration from the art department. There is a certain incongruity about the design of ornaments that detracts from the beauty of the car, although this too may be a minor point.

Whatever may be the reasons for the move, almost without exception

Perspective of Studebaker front showing air cooling fins stamped in sides of radiator shell. Note how the effect of these horizontal lines has been carried out into the hood louver.



the Show models were trimmed in flat fabrics. Last year if we recall correctly, most cars were trimmed in pile fabrics which again proves the difficulty of calling the turn.

Rubber is getting on the outside of cars to a greater degree, chiefly in covering more of the metal-to-metal joints. Certainly it's a mighty simple and inexpensive way to finish off such points as the junction of the sheet metal and frame ends, as well as to gasket the filler spouts and what-not projecting at various places. However, with the return of bright color on body finish, it might be well to finish the rubber doodads in a harmonizing color rather than in the black which has sufficed until now.

Some of the more distinctive details to be found at every turn are worthy of mention; a few have been illustrated here.

Take the hood louver treatment

for example. Olds achieves a pleasing effect by blending the louver with side mounting bracket for the headlamp on both the six and eight. Chrysler Airflows have an interesting louver set off by a die cast section at the front end. Pontiac has switched to a louver treatment that harmonizes with the plated lines running over the top of the hood.

The few sketches shown here will serve to illustrate the metal treatment at the front end at the junction of the fenders and hood sides. Much of the tendency is to follow the style set by LaSalle last year, i. e., a decided shelf high up between fender and hood line, rounding off at the front. This is found to a degree on the Studebaker, Pontiac, Plymouth, Olds, Dodge, and Airstream models. On the Dodge, the effect is relieved by the tricky housing below the headlamps, used to cover the twin horns.

Pontiac has a snappy radiator and hood treatment which is quite distinctive. The radiator is well rounded and the bright lines forming the front section of the grille are carried completely over the radiator shell extending the length of the hood. Studebaker, too, has a unique treatment at the front end. Cooling fins are set horizontally from top to bottom of the shell sides while the effect of the short fins is carried out in the louver section giving the impression of long flow lines from the radiator front to the rear of the hood when viewed in perspective from the front of the car.

A discussion of these distinctive features would be incomplete if we didn't mention the front lamp housing design on Chrysler Airflows. It



Typical windshield on Fisher bodies with a narrow chromium-plated strip joining the sections of safety glass. Wipers are mounted at the bottom with mechanism concealed in the cowl.

is a single unit, housing not only the lamp but a very interesting parking light with a cylindrical lens, the latter in a grille protecting the horns.

Oldsmobile has shown the way in radiator grille construction. Look at it again. It's a one-piece die casting of zinc alloy, chromium plated, and it weighs 17 lb., no less. If Olds sells as many cars in '35 as it did in '34, the amount of 99.99 per cent slab zinc required for this part alone will exceed 500 tons.

Last but not least, it is well to note that the stamped steel wheel has captured practically all the business. In combination with the neat chrome plated wheel centers used today, many regard these wheels as the most pleasing the industry has ever produced. Wheel pants, of course, are shown on a large number of cars, an innovation of no little importance being the use of a formed rubber molding between the pants and the fender.

total exposed surface of 14 sq. in. One face was primed only, while the other was primed and finished with walnut lacquer. A current density of 50 amperes per sq. ft. or about five amperes per sample was found to be suitable. To maintain this current, a potential of 2.5 volts between the samples and the tank was required.

The composition of the alkaline solution used in the experimental tank was as follows: 63 per cent by weight, NaOH; 29.5 per cent by weight  $\text{Na}_3\text{PO}_4$ ; 7.5 per cent by weight  $\text{Na}_2\text{SiO}_3$ . The NaOH and  $\text{Na}_3\text{PO}_4$  act as carriers of the electric current and also as emulsifiers while the  $\text{Na}_2\text{SiO}_3$  helps in the free rinsing of the work. These chemicals are added to water in the proportion of 13.6 oz. per gal. NaOH; 6.38 oz. per gal.  $\text{Na}_3\text{PO}_4$ ; 1.62 oz. per gal.  $\text{Na}_2\text{SiO}_3$ . When the work is negative, hydrogen is liberated; when the work is positive oxygen is given off.

No license agreement or payment of royalties is required in the use of this process or any modification of the procedure for specific installations.

## Lacquer and Enamel Removed From Sheets by Electrolysis

**A**T the recent S.A.E. annual meeting in Detroit, the Detroit Edison Co. demonstrated an electrolytic method of stripping lacquer or enamel coatings from automotive sheet metal parts, which was developed in the company's research laboratories. There is a possibility that the same procedure may be applied to the cleaning of metals prior to electroplating.

In operation, metal parts of such size as may be conveniently suspended from a moving conveyor chain can be passed progressively through a stripping tank and then successively through rinsing and drying equipment. This is not a rust-proofing process and no protection against rusting is offered which means that the cleaned work must be processed immediately.

The chief elements of the process for stripping are: the use of a suitable alkaline solution, and a reversing direct current, alternately making the work positive and then negative for an interval of 10 sec. or less. It has been found that when metal parts coated with lacquer or enamel are treated in a balanced hot alkaline solution with this method, that all of the lacquer and primer surfaces are completely removed and the metal comes out chemically clean and in the same condition, mechanically, as it was prior to coating.

The advantages of the method are as follows:

1. Time required for cleaning is reduced to approximately 5 min. for lacquers, and 10 to 20 min. for high bake enamels.
2. Due to the reduction in time it is possible to handle the stripping operation on a conveyor.
3. The cost of electrical energy

for this application is very low and according to the rate will vary between one to two cents per 100 sq. ft.

In the test demonstration, the samples were painted strips of iron, 1 in. wide and 7 in. long with a

## Possibilities of Propane and Butane in Rail Service Discussed by Barnard

**N**A paper on "Rail-Car Fuel Possibilities" prepared for the A. P. I. annual meeting by D. P. Barnard of the Standard Oil Company (Indiana), the use of liquefied gas fuels, such as propane and butane, for rail-car and rail-train engines is suggested. One advantage of these fuels would be that, because of their high anti-knock values, they would permit of materially higher b.m.e.p.s. than would be possible with gasoline or in Diesel engines. At present prices and under certain assumptions made in the paper, the net fuel cost would be about 20 per cent higher with butane engines than with Diesel engines. This advantage of the Diesel engine would be offset, however, by the fact that the butane could be used for refrigerating purposes in addition to being used as fuel, as well as by the possibility of a much lighter, quieter, and less objectionable powerplant.

The greater fire hazards with butane are referred to and it is predicted that rather rigid safety requirements would be necessary, but it is thought that these need not be more severe nor more complicated than those now applied to the ship-

ping and handling of gasoline. Further, it appears that, within the limits of fuel quantities which will probably be required for rail car service, the relative costs of commercial butane and *satisfactory* Diesel fuels should approach more closely than is the case at present. There are very strong indications that suitable fuels for high-speed, high-output compression-ignition engines will require very careful selection of stocks and, ultimately, the preparation of rather highly specialized products—which must necessarily be more costly than either of the two standard products on which the calculations were based.

On the other hand, there seems to be no immediate indication that butane will not be available in amounts substantially greater than those assumed to be necessary in the paper, at the present prevailing cost level. "At any event," concludes the author, "it appears that the liquefied-gas-burning, spark-ignition engine should be considered very thoroughly, and the Diesel engine should not be accepted as the ultimate form of rail-car powerplant at this stage of development."

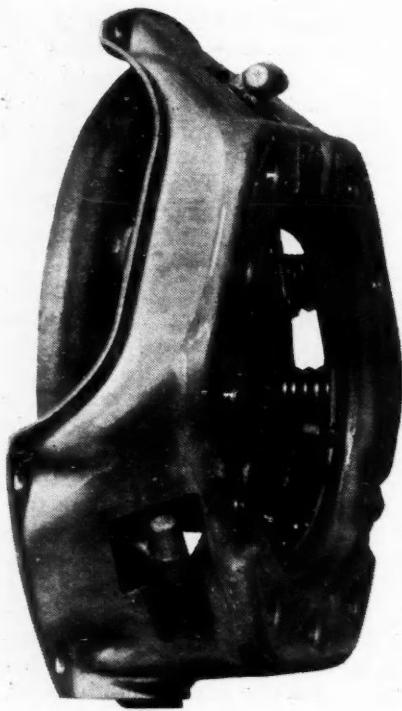


Fig. 1—The cover plate assembly

# The New Long S

OFFERED in five sizes ranging from eight to 12 in. in diameter, the "CF" series of clutch announced for 1935 by Long Manufacturing Co., represents the synthesis of several years of experimental work on a wide variety of different types of clutches, both conventional and automatic. Some details of the new series of clutches on which Long is concentrating for both passenger cars and trucks, virtually to the exclusion of other types, have already been published in connection with the announcements of new models by several car manufacturers, but in view of the considerable interest in this development in the industry it is thought desirable to give more complete engineering and production details.

Basically the clutch may be designated as a semi-centrifugal type characterized by five important features:

1. Unusually low pedal pressure at

engine idling speeds, together with,

2. A gradual build-up, through centrifugal weights, of spring pressure to increase torque capacity of the clutch as the necessity for such capacity increases with engine speed.

3. A design of cover plate, etc., imparting to the assembly excellent cooling characteristics, increasing the life of the clutch facings, Fig. 1.

4. Internal friction of the assembly has been reduced to a minimum through the use of anti-friction bearings.

5. In spite of the incorporation of a semi-centrifugal mechanism, the clutch has fewer major parts than usual, it having been found possible through careful design and manufacture, to reduce the number of clutch springs and levers. Reduction here is also traceable in part to the adoption of the torque capacity control mechanism.

As shown in the sectional drawing

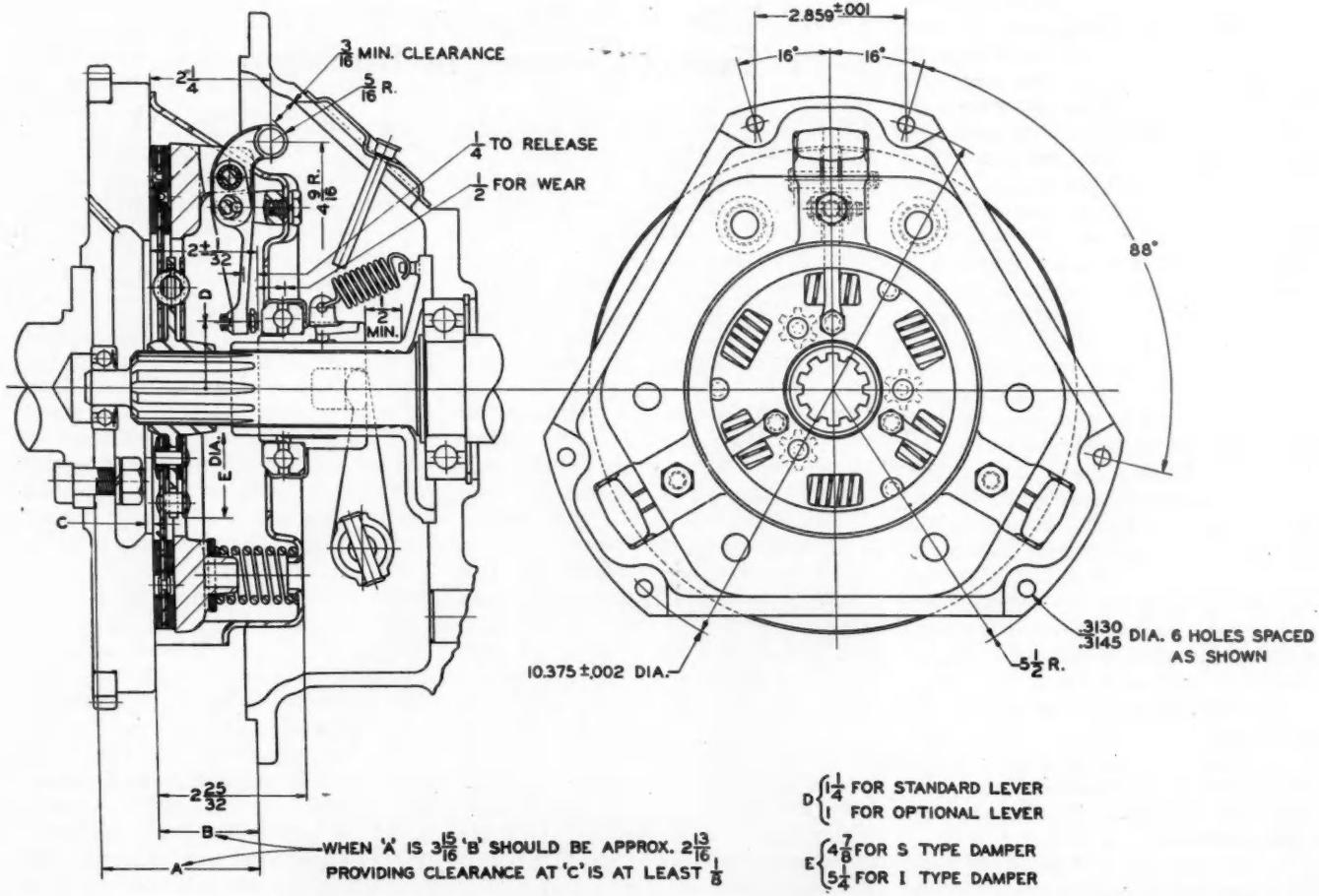


Fig. 2—The new Long semi-centrifugal clutch

# Semi-Centrifugal Clutches

Five sizes ranging from 8 to 12 in. are available—Production costs cut by reduction in number of basic parts and standardization on one basic design.

by Athel F. Denham

Detroit Editor, Automotive Industries

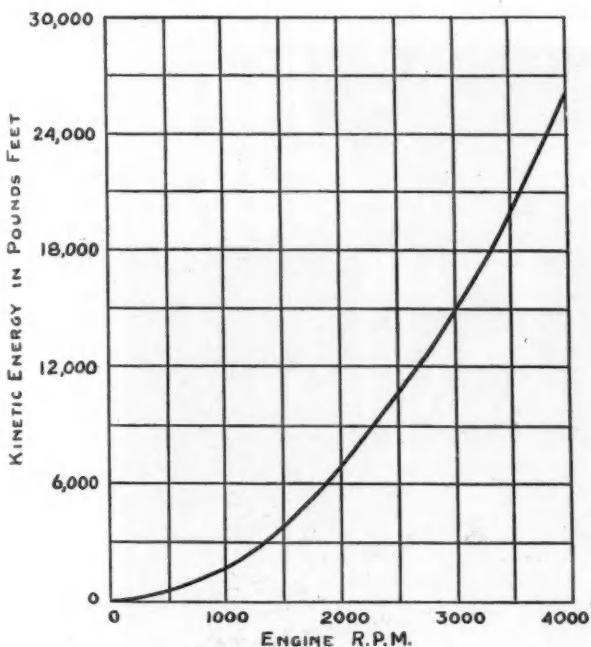


Fig. 3 — Kinetic energy graph of Ford V-8 crank-shaft system including flywheel and clutch over plate assembly

Fig. 4—Centrifugal force diagrams for 9 CF, 10 CF and 11 CF models

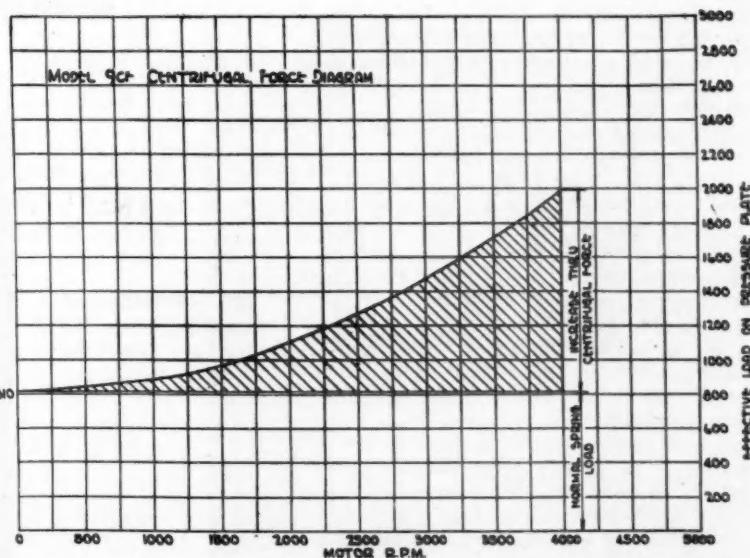
capacity of the clutch insufficient to take the load, get-away will necessarily be slow, and vice versa.

Since the capacity of a conventional clutch is determined by the area and mean radius of the facing, the coefficient of friction, and the spring pressure, it would seem reasonable to suppose that with conventional designs as engine speeds go up, the ability to absorb energy of the clutch decreases at the same time as the energy the clutch is to absorb goes up.

The Long series "CF" clutches do just the opposite, the increase in spring pressure through centrifugal build-up more than offsetting the loss in frictional coefficient. As a matter of fact, Long has found it possible to increase the torque capacity ratings of their clutches by from 10 to 15 per cent for the same diameter of facing and the same initial coefficient of friction. Thus, the 9-in. clutch used on the Ford passenger car is now rated at 165 ft.-lbs. as against 150 formerly; the 10 in. used on the Packard 120 is rated at 225 ft.-lbs. against 200 for the former

of the new clutch, Fig. 2, the pressure plate assembly incorporates three centrifugal weights as part of three levers whose function it is through centrifugal force acting on the weights mentioned, to increase the effective spring pressure on the pressure plate as engine speed goes up.

The importance of this development may be better understood perhaps through considering what happens in a clutch as speeds go up. At high speeds there are two important factors which militate against the ability of the clutch to carry the necessary load: first, the fact that the coefficient of friction of the lining drops off at high slipping speeds, and, second, that the kinetic energy, which the clutch has to absorb, increases rapidly as engine speeds reach higher values, Fig. 3. This is particularly important for a fast get-away in second speed. If the coefficient of friction is too low or the



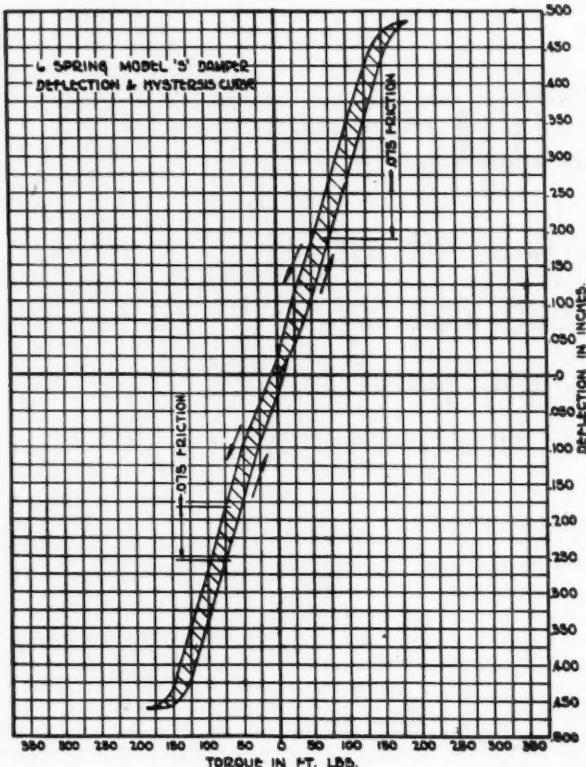
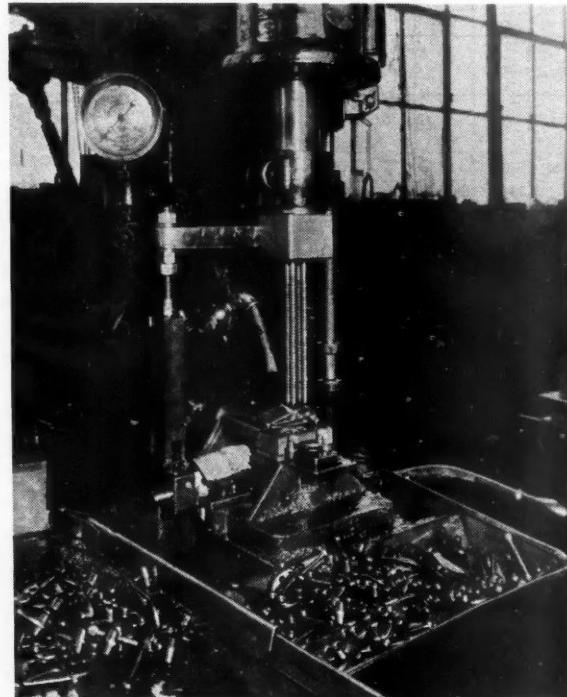


Fig. 5—Performance characteristics of damping mechanism in driven disk

clutching at high speeds. A clevis pin through the second hole, transmitting centrifugal forces to the pressure plate, is carried in needle bearings for minimum friction and long life without lubrication attention.

In production these levers are forged and coined. The first finishing operation is the drilling of both holes on a three station Baker drill press capable of handling six pieces at one time, one set of holes being drilled on one station and the other set at the second station, while the operator is reloading the indexing fixture. Next, the holes are finished on a special Oilgear machine equipped with four vertical broaches, Fig. 6. Two levers are finished at a time with this equipment, which is provided with an automatic ejector and spring chuck.

Fig. 6—Broaching levers on Oilgear machine



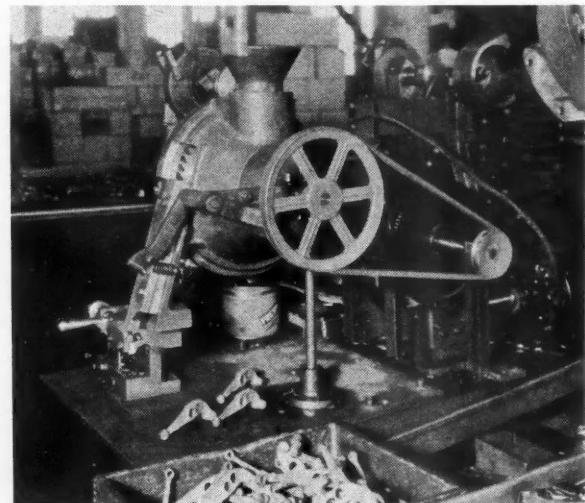
10-in. Long clutch; and the 12-in. size as used by one maker is rated at 375 ft.-lbs., an increase of 50 ft.-lbs. over the previous rating. The curves in Fig. 4 show how pressure and capacity are built up with engine speed due to the action of the centrifugal weights.

As far as the pressure plate itself is concerned, changes are not radical in character. There are improvements in the damping mechanism, the performance characteristics of which are shown in Fig. 5. To eliminate chance of the damper springs wearing in to the retainers at the hub, the latter are now hardened and have chamfered slots. The springs also are chamfered at their ends and are set in aligned openings narrower at the outside than at the inside, so that the compression of the spring counteracts the effect of centrifugal forces on the springs, reducing the chances for wear at the openings for more consistent operation.

The cover plate stamping is of novel design, triangular in shape to provide the maximum of air space opening for cooling of the clutch surfaces and elimination of facing dust. In addition the shape of the cover plate permits economical manufacture without sacrifice of strength.

So far as the action of the centrifugal weights is concerned it will be noted that the levers incorporating these weights are provided with two holes, a roller located in one of them acting as a fulcrum. Incidentally, this roller which is slightly loose in the hole, is thrown out to the periphery of the hole by centrifugal force, changing the leverage ratio to facilitate de-

Fig. 7—Method of loading needle bearings into the lever holes



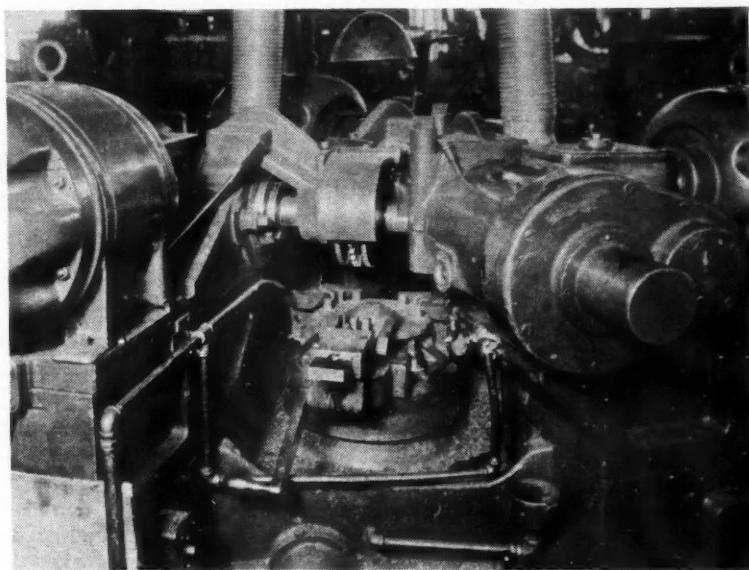


Fig. 8—Milling bosses to which the levers of the centrifugal mechanism are pinned

Adjusting screw holes are step-drilled and tapped on a semi-automatic Bodine special four spindle drill, the use of three spindles for drilling the holes in steps being for the purpose of equalizing drilling and tapping times. Fig. 7 shows the method of loading needle bearings into the lever holes on an automatic fixture. Stub pins are assembled at the same time to insure retention of the needles until this pin is knocked out by insertion of the clevis pin in assembling the lever to the pressure plate.

Considerable simplification in production operations on the clutch as a whole has been made possible by standardization on one general type of design the major variations being in sizes. Thus much of the production equipment is designed to handle parts for several sizes of clutches by simple changes in tooling.

This applies for instance to the production of the pressure plate. This part is first rough and finish turned and rough and finish bored simultaneously on Sundstrand stub lathes, using follow up tools. An interesting operation, Fig. 8, shows the milling of the bosses to which are pinned the levers of the centrifugal mechanism. These bosses are milled simultaneously, without indexing through the use of three separate driving heads, the operation of finishing the faces of these bosses, therefore, being obtained with a single chucking operation.

Fig. 9 shows the next operation on the pressure plate, consisting of drilling the clevis pin holes in the aforementioned bosses. In this case four spindles are provided to handle all the clutch sizes involved. In case of heavy runs on one size, however, spindles can be quickly changed over to handle that size by changing the location of the

stop pin in the feed mechanism and reversing the cams which raise and lower the spindles, and index the fixture holding the work. Except for loading, therefore, these operations are also automatic, and one operator can easily take care of the four drills, since the timing of the machines is such that three spindles are working while the fourth is being loaded. The clamp for holding the work is spring actuated, with foot pedal control. Suction pipes are provided at each of the ball bear-

ing drills to carry away cast iron dust.

Another rather comprehensive operation in the production of these clutches is in the facing and turning of the pressure plate hub. After broaching the splines in the hub, the part is mounted on an arbor, and all surfaces and diameters rough and finish turned and faced on Sundstrand stub lathes.

Following this operation, the hub disk is pierced for the mounting of the damper springs, together with the piercing of the rivet holes, etc. This is done on a two stage die, and is followed by a restrike.

It will be remembered that in Long clutches one set of facings is riveted to spring steel segments, which in turn are riveted to the driven disk, these segments providing a cushioning action during engagement by virtue of their gradual flattening out as pressure is applied. These segments are stamped out from spring steel strip stock on a continuous feed dieing machine which at the same time pierces the segments and forms them to final shape.

The mounting holes in the three legs of the clutch cover plate are not finish reamed until after the clutch is completely assembled to insure alignment. For this purpose locating for finish reaming is from the bore of the pressure plate.

After this operation the clutches are mounted on balancing machines, locating from the mounting holes and are balanced, if necessary, by drilling into holes in the bosses on the pressure plate.

It is understood that all important features of the clutch are covered either by patents issued or pending.

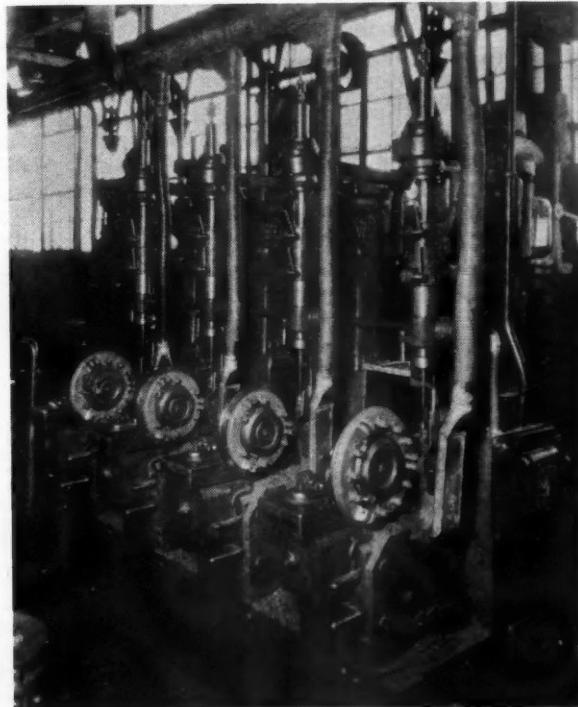


Fig. 9—Drilling clevis pin holes in bosses milled as shown in Fig. 8

# P&W Has New 750 hp. Radial

THE Pratt & Whitney Aircraft Co., East Hartford, Conn., announces a new series of its Hornet engines, the E Hornet, a single-row, fixed, nine-cylinder radial powerplant rated at 750 hp. at 7000 ft. altitude. The Department of Commerce has granted Approved Type Certificate No. 136 to the first engine of this series. Following are brief specifications of the S1E-G Hornet, the engine covered by the certificate:

Approved Type Certificate No. 136.

Rating: 750 hp. at 7000 feet.  
Propeller ratio: 3:2.  
Compression ratio: 6.5:1.  
Blower gear ratio: 12:1.  
Overall diameter: 54 7/16 in.  
Overall length: 51 in.  
Bare weight: 1005 lb.

Improvements made in the Hornet to a considerable extent parallel those made in the Wasp, the new model of which was illustrated and described in *Automotive Industries* of Dec. 1. Like the H Wasp, the E Hornet has automatic valve gear lubrication, and the system employed is illustrated by the sectional view reproduced herewith.

Engine oil under pressure is fed to a distributing groove machined in the nose section of the engine and thence through metering ports to the valve tappet mechanism. From the valve tappet it is permitted to flow through the pushrod into the rocker arm and then is distributed to the various parts in the rocker box requiring lubrication.

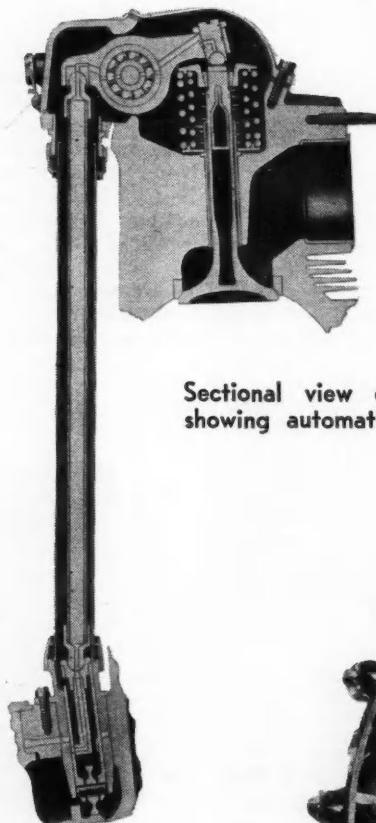
After serving its purpose, the oil drains by gravity through the pushrod cover tubes to the crankcase or through a newly designed scavenging ring to a sump, from where it is pumped back into the oil tank. Oil is not permitted to collect in the rocker boxes either in flight or after the engine is shut down. Consequently, the action of the valve gear is at all times normal, and starting, particularly in cold weather, is much easier.

Among other improvements in the Hornet which were also made in the Wasp and covered in the article in

our Dec. 1 issue, are thermostatic control of oil temperature, by which the temperature of the oil entering the engine is kept close to 155 deg. F.; priming of the engine by manipulating throttle and mixture-control levers in the cockpit; strengthening of supercharger drive parts; a new stainless-steel and cast-aluminum hot spot; pressure baffles attached to the cylinders; an improved cam

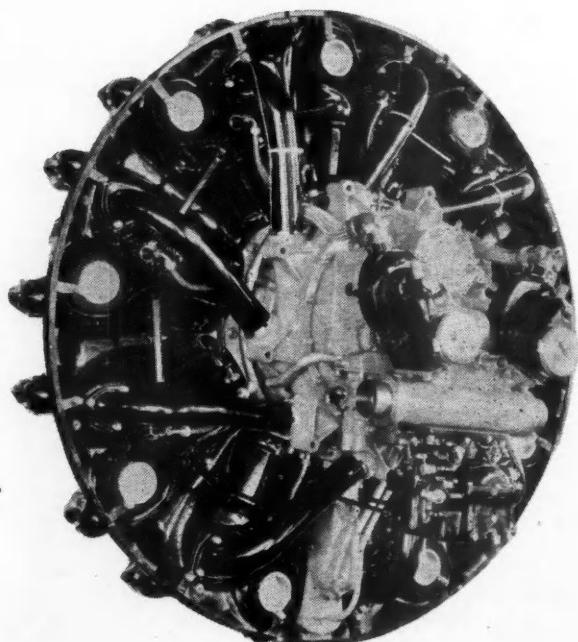
mounting and cam-driving mechanism; and increased number of splines in the joint between the two crankshaft sections; mounting of the control valve for the Hamilton Standard controllable-pitch propeller on the rear face of the sump instead of on the nose section, and steps taken to improve the oil-tightness of the engine.

Cylinders of the E Hornet are made of a new alloy steel and are taper-ground at the top to give a cylindrical bore at normal operating temperatures. Austenitic steel has replaced bronze as valve-seat-insert material. The exhaust valves are faced with Stellite and are sodium-cooled. The sodium chambers, instead of being cylindrical, are necked down to provide greater strength at the section where failure is most likely to occur (see section). The head of the exhaust valve also has been redesigned for more nearly uniform distribution of stress.



Sectional view of valve mechanism,  
showing automatic lubrication feature

Hornet E 750 hp.  
Engine



# AUTOMOTIVE ABSTRACTS



## High Speed Steel Tool Temperatures

**A**T the recent annual convention of the American Society for Metals, O. W. Boston and W. W. Gilbert of the University of Michigan, presented a paper, "Cutting Temperatures Developed by Single-point Turning Tools" which should be of interest to those concerned with metal cutting problems.

This paper gives the results of a series of experiments to determine the temperatures developed by a high speed steel tool when cutting an 0.61 per cent carbon steel on a lathe when the cutting speed, tool angles, feed, and depth of cut were varied successively. Temperatures were determined by the tool-work thermocouple method for each of numerous conditions of tool shape, depth of cut, and feed.

The following summary covers some of the major conclusions arising from this test project:

1. The increase of temperature up to 550 deg. Fahr., is more rapid for an increase in cutting speed than it is above 570 deg. Fahr. where the temperature increase is approximately proportional to the increase of speed.
2. Increasing the nose radius from 0 to  $\frac{1}{4}$ -in. permits an increase of 68.8 per cent in cutting speed at any constant temperature.
3. The surface color of the heated chip is not a direct indication of tool temperature.

4. Increasing the side-cutting angle from 0 to 60 deg. permits an increase of 71 per cent in the cutting speed at constant temperature.

5. A uniform increase of cutting speed of 61.7 per cent is obtained at a constant temperature by increasing the side-rake angle from 0 to 40 deg.

6. Variation of back-rake angle has relatively little effect on the cutting temperature, when the ratio of depth to feed is large. The cutting speed at uniform temperature may be increased 5.6 per cent for a change in back-rake angle from 0 to 16 deg.

7. When operating at a constant speed, minimum tool temperatures may be obtained by using large depths and small feeds for a given area of cut.

8. For a speed of 20 ft. per min. and a feed of 0.025-in., the cutting temperature is increased only about 9.4 per cent by doubling the depth of cut from 0.010-in. to 0.020-in., 24.8 per cent, by increasing the depth of cut from 0.010-in. to 0.050-in., or 47.3 per cent, by increasing the 0.010-in. feed 20 times.

9. For a speed of 20 ft. per min. and a depth cut from 0.103-in., the cutting temperature is increased 19.5 per cent by doubling the feed from 0.010 to 0.020-in., or 70.8 per cent, when the 0.010-in. feed is increased five times.

## Tread Variations Favorable to Skidding

**B**EFORE different designs of oscillating axles can be judged critically, it is necessary to briefly recall the requirements made of such constructions.

The principal objects of oscillating axles are to permit

of the independent or "axle-less" suspension of the road wheels and of reduction of the unsprung weight to the minimum. In order that these advantages may not be bought at the cost of disadvantages, it is necessary to so work out the kinematics of the suspension that the wheel camber is not changed by spring action; otherwise, on account of the familiar gyroscopic effect, the car will shimmy, or if that is prevented by suitable means, the front-wheel bearings and the linkage of the steering mechanism will be subjected to additional stresses. Another requirement is that the width of track must not change when the wheel passes over an obstruction.

This last requirement is not fully understood even among engineers. Most of the early forms of independent suspension—such as the Tatra—involved the use of oscillating axles. These latter possess the peculiarity that under spring action there is an important change in the width of tread. Every change in the width of track results in a lateral deformation of the tire; this has a strong damping effect on the vibrations and thus tends to smoothen the running of the vehicle. However, the damping action almost vanishes on wet, slippery roads on which the tire, instead of being deformed laterally, slides laterally over the road surface. What makes this serious is that—since the friction of motion is lower than the friction of rest—if the tire is thus caused to slide by a change in the width of track, a much smaller lateral force suffices to set the car skidding. Therefore, a car with a type of independent suspension in which the width of track changes with spring action is particularly given to skidding—the more so the greater the change in width of tread corresponding to the range of spring action.—Rudolf Mertz in *A.T.Z.* of Sept. 25.

## 59 lbs. of Aluminum In New Citroen Front Drive

**C**ONSIDERABLE use of aluminum is made in the new Citroen front-drive 7 hp. car. In the engine there is 15.5 lb., including the pistons, inlet manifold, water-pump housing and miscellaneous parts; in the transmission there is 17 lb., the case and cover both being of light alloy; the aluminum bell-housing weighs 15.25 lb. and other aluminum parts 11 lb., making the total weight of aluminum in the car substantially 59 lb. The new Citroen plant comprises an aluminum foundry with a capacity of 10 tons per day.—*Revue de l'Aluminium*, September-October.

## 1 Hp. Runabout On British Market

**A**1-HP. single passenger runabout, known as the Rytecraft Scootacar, has been placed on the British market by J. W. Shillan of London. It has a frame composed of two tubular side members and similar cross members, which is supported directly on the front and rear axles. The engine is a single-cylinder, two-stroke, air-cooled design, mounted directly on the rear axle, and drive is through enclosed gearing and a centrifugal clutch to the left rear wheel. Control is by a single pedal, the brake being applied automatically when this pedal is released. A depression of about half an inch releases the brakes, a further depression accelerates the engine, and at an engine speed of 800 r.p.m.

the clutch engages and the car starts. Pneumatic tires of 12 in. diameter are fitted and since the frame rests directly on the axles the center of gravity is very low. The weight of the car complete is a little over 200 lb., its maximum speed is 15 m.p.h., and the fuel mileage is given as 60 per U. S. gallon.—*Engineering*, Oct. 5.

## Modern Racing Cars

**A**T the present time the eight-cylinder engine is the accepted racing type. It gives very small bore and stroke dimensions, readily turns over at very high speeds, even at low speeds shows much greater torque than was obtained formerly, and has a very good volumetric efficiency. The Auto-Union was the only car in the French Grand Prix race with a 16-cylinder engine, comprised of two banks of eight cylinders arranged V fashion, with a displacement of 98 cu. in. per bank. The engine is located at the rear, but the expression "at the rear" must not be understood in the same sense as applies in the cases of stock cars with rear-mounted engines produced by Mercedes in Germany and Crossley in Great Britain. The engine does not overhang the rear axle at the rear, but instead is mounted directly ahead of that axle, and the driver is located in front with the tanks, the whole arrangement ensuring a high degree of stability.

There has been much talk concerning rear-mounted engines recently. I do not believe in the desirability of this arrangement, if the engine is placed in back of the rear axles. On the contrary, the arrangement adopted by Porsche in the Auto-Union is quite rational. However, as it could not well be applied to stock cars it will probably remain confined to a certain class of racing cars. I believe much more in the adoption of independent springing for racing cars.

There is no reason why independent suspension—particularly for the front wheels—should not possess the same superiority in the case of racing cars that it has been shown to possess for stock cars. In two "crashes," one by Brautschich during training and the other by Fagioli during the race at Monthlery, both with Mercedes cars, in which the cars left the road and ran onto the shoulders, it was undoubtedly the independent suspension that saved the lives of the drivers and prevented the cars from overturning.

Another thing that I believe will be done in the near future is to make a more serious study of streamlined forms than has been done in the past. An exception may here be made of the German cars, which from this point of view are probably in the lead. Let us not forget that streamlined forms of stock cars were evolved from the work done some 12 or 13 years ago by the Germans Rumpler and Jaray. After having treated this work with disinterestedness at the time, the majority of the world's automobile manufacturers have begun to admit the importance of well-streamlined forms, and however unpleasant it may be for European manufacturers, it is the Americans who are setting the example in the application of these forms to vehicles for the general market.

The next racing cars will be scientifically streamlined cars, exceedingly low, and will have independent springing at least in front.

Some of the present racing machines have special features; such, for instance, as drive to each rear wheel by a separate propeller shaft. This arrangement is not new. It was seen—even though the mechanical arrangement was somewhat different—on Austin trucks brought out shortly after the war, and it was also used on the twelve-cylinder Alfa Romeo of some two or three years ago, which appeared only for training and did not take part in any race. That engine, with two blocks of six cylinders having a total displacement of 213 cu. ft. developed 300 hp., and the car was to develop a speed of 190 m.p.h. Arcangeli killed himself with this machine at Monza, under conditions which will long be remembered.—Roger Darteyre in *Revue des Agents*, Sept. 10.

## Servo Brakes

**E**XTENSIVE comparative tests have shown that the optimum retardation by the brakes, from the standpoint of traffic safety, is between 13 and 16 ft. per sec. per sec. The pressure which the average driver can exert on the brake pedal may be put down as 110 lb. Multiplication of the pedal pressure effected by the brake mechanism, which is equal to the ratio of pedal travel to radial movement of the brake shoe, can be made as high as 100, if the brake mechanism is very carefully built. However, such a high ratio of multiplication is not always obtained in mechanical brakes. Slack in the joints and extension of the brake rods reduce the ratio. In setting the ratio it must not be overlooked that if it is made too high, the brakes must be adjusted very frequently.

Assuming the efficiency of transmission to be 100 per cent, that the friction coefficient between brake lining and drum is 0.4 and the ratio between brake drum diameter and wheel diameter 0.5, and that a minimum retardation of 13 ft. per sec. per sec. is required, the maximum gross weight which can be stopped in a safe distance with ordinary brakes without servo mechanism is 5500 lb.

Servo brakes are of particular importance in the case of tractor-trailer trains. Of the different types, vacuum brakes and compressed air brakes are equally applicable to trailers. Trailers sometimes are equipped with so-called reaction brakes. When the brakes are applied to the tractor, the trailer runs up against the tractor, and the latter, through the intermediary of the coupling rod, applies the self-energizing brakes of the trailer. This type is cheap to build, but the use of the self-energizing feature has its disadvantages. In most cases the self-energizing principle is effective only for one direction of rotation of the brake drums, that corresponding to forward motion of the trailer; then, in the event of backward motion, as when the trailer becomes uncoupled, the braking effect is very small.—G. Mueller in *A. T. Z.*, Oct. 25.

## Double End French High Speed Diesel Train

**A**HIGH-SPEED Diesel-electric train has been placed in service on the Northern Railroad of France. It has been tested at speeds up to 100 m. p. h., but scheduled speed will not exceed 8 m. p. h. As the train must run in both directions its ends are of semi-circular form in the horizontal plane, the top sloping backward. The two end cars are motor cars while the center car is a trailer. Each motor car is equipped with one Maybach 12-cylinder Diesel engine developing 410 m. p. h. at 1400 r. p. m. Owing to their high speed, and the use of roller bearings and light alloys, the engines are comparatively light, weighing only 4300 lbs. each or a little over 10 lbs. per hp. This makes it possible to mount the generating set directly on one of the two four-wheeled bogies of each motor car, the other bogie carrying the electric motors. The train, which has a total weight without load of about 48 short tons, is designed to accommodate 30 first-class and 114 second-class passengers.—Le Genie Civil, Sept. 15.

## Diesel Engine Replacements

**T**WO German manufacturers, MAN and NAG-Buessing, have brought out four-cylinder Diesel engines for replacement of gasoline engines in trucks. The designs are so worked out that mounting in trucks of different makes occasions the least difficulty.—ATZ, Aug. 25.

## Fall Announcements

(Continued from page 129)

functioning of the Automobile Labor Board to promote and maintain harmonious labor relations, progress of the industry in its service to the general welfare will be maintained."

The President also said that the manufacturers had indicated to him their serious purpose to bring about better regularization and that they are engaged in serious studies to accomplish it. After mentioning the NRA report on automotive labor conditions, which probably will be released next week, he said that in line with recommendations already made and with conclusions reached independently, he had obtained at this time an impression of willingness to go along with the plan for greater regularization from which benefit may be confidently expected to accrue.

Alfred P. Sloan, Jr., president of General Motors, and Walter P. Chrysler, chairman of the Chrysler Corp., conferred this afternoon with the President at the White House. Present at the conference were S. Clay Williams, NIRB chairman, and Donald Richberg.

The fall announcement plan apparently is based on statistical data originally submitted to NRA by the manufacturers more than a year ago which tends to show that fall announcers enjoy greater regularity of operations than do January announcers. Although the report containing these data has never been made public, it is understood the fall announcers represented in the analysis had a variation in man-hours from a low of 6.8 per cent of the monthly average in January to a maximum of 10.5 per cent in October. In the case of the January announcers the variation was from 5.3 per cent of the monthly average in November to 11 per cent in March. The effect of the plan, it is said, will be to reduce somewhat the maximum number of workers employed by the industry at certain periods, but to give more total hours annually and more income to those who have jobs. The effect on costs is conjectural, though there is some talk that it will increase them slightly. It has been estimated that adoption of the plan will expand the period of greatest activity from the present five months to about eight months.

The conferences with the industry on the renewal of the code began here Tuesday night with Donaldson Brown and John Thomas Smith of General Motors and Walter Chrysler representing the manufacturers. Chairman S. Clay Williams of NIRB and Donald Richberg, director of the National Emergency Council, represented the administration.

On Monday the renewal of the code was discussed at the White House at a

conference attended by Mr. Richberg, Labor Secretary Perkins, Mr. Williams and Leon Henderson whose report on the investigation of automotive employment conducted under his direction has not been made public. Nothing was given out following this conference but it was indicated that before the code was renewed both manufacturers and labor would be called into conference.

## Eastman Urges Bigger ICC

(Continued from page 129)

prises as its contents are in line with expectations.

The motor carrier bill in a general way is patterned after previous proposals on this subject. The policy of Congress is declared to be "to promote, encourage, and regulate transportation by motor carriers . . .; provide adequate, economical and efficient transportation service by motor carriers; improve the relations between such carriers and other agencies of transportation. . . ."

The reorganization of the ICC recommended in view of the broadened powers that are asked for it, provides for a chairman and four divisions whose duties are indicated by their titles. The divisions are finance, railroad, water and pipe lines, and motor and air. Special divisions would be created where necessary to deal with specific problems. Each division would have a chairman and they together with the chairman of the commission would constitute a control board. The commission would be enlarged to 16 members of which three would be assigned to the motor and air division, three to the water and pipe line division, and five to the railroad division.

On operations involving not more than three States, the commission is required to refer them to joint boards comprising representatives of each of the States concerned. Where more than three States are involved, reference to a joint board is at the discretion of the commission.

Common carriers are required to have certificates of convenience and necessity while contract carriers must secure permits. Carriers in operation in 1934 are protected by a "grandfather" clause. Regulation of rates and services is provided for.

The proposed regulation, the report says, probably "will somewhat lessen the flexibility of truck operations and set up requirements which small or poorly financed operators will not be able to meet. But it should confer benefits on the trucking industry which will more than compensate for these losses. . . ."

"Orderly conditions in the trucking field have not been promoted by the sales tactics of some manufacturers, the report declares. "Inexperienced, and often ignorant and poor, individuals have been induced to buy trucks on the installment plan by high-pressure salesmanship and reckless representations as to prospects for traffic and earnings. Such exploitation of operators has been a substantial factor in the present low state of the industry. While it is understood that this condition has been much improved, there is need for a thorough house cleaning of sales practices."

## NLRB Orders Vote at Bendix Products Plant

South Bend, Jan. 31—Vincent Bendix and representatives of the workers are reported to be in conference here today. A report which could not be confirmed said that union officials had been informed that the Bendix company would contest the NLRB order in the Federal courts. Efforts to secure a statement from the Chicago Regional Labor Board as to whether the Bendix company had filed its payroll lists with that agency as directed by the NLRB order, proved unavailing.

An election to determine who shall represent the hourly wage employees of Bendix Product, South Bend, has been ordered by the National Labor Relations Board, acting on the petition of United Automobile Workers' Federal Labor Union No. 18347. The corporation was given five days to turn over payroll lists from which the Chicago Regional Labor Board could determine those eligible to vote. In the event the corporation does produce the payroll lists, the election was ordered to be held on the third business day thereafter.

The union claim of 3000 members out of an approximate total of 3500 eligible workers was countered by the claim of the Bendix Employees' Association that it has a membership of 2100. In its order the board says that it found evidence of interference in the organization and conduct of the employees' association and of discrimination. In the latter part of last year, however, the association notified the Regional Labor Board that it had severed all connections with Bendix and was operating as an independent union, according to the NIRB.

## Dillon Attacks Industry at NRA Employment Hearing

Washington, Jan. 31.—Addressing the NRA hearing on code employment provisions, Francis Dillon, American Federation of Labor organizer in the automotive industry, attacked the industry sharply. He declared that profits in the industry have been tremendous, not only in its past history but also during the last year of 1934, "with the possible exception of a few independent manufacturers."

"The automobile industry is well able to enlarge employment in addition to raising wages, and in fact is not doing its part until it does."

Like preceding American Federation of Labor speakers, Mr. Dillon urged increased wages and the 30-hr. week in industry generally.

As he warmed up to discussion of the automobile industry, Mr. Dillon charged that manufacturers broke faith with the President and with labor. Implying a possible strike in the industry, he declared vigorously that never again would he advise automobile workers "to refrain from using their economic powers, until these corporations are made to understand they must recognize the rights of these thousands of people."

# Hardened Alloy Cast Triple Mileage Between Reconditionings



Hand chamfering the bore of the liner

**H**ARDENED cylinder liners of nickel-chromium cast iron are being used in the four largest engines built by the General Motors Truck Corporation, Types 468, 525, 616 and 707. Most of these engines are used in large coaches, the remainder mainly in trucks. All are six-cylinder, valve-in-head engines with heat-treated aluminum-alloy pistons fitted with cast-iron rings of from B100 to B106 Rockwell hardness. Formerly one-piece cylinder blocks were used, of a Brinell hardness ranging from 229 to 241, and the following comparison of the former construction with the present one employing the removable liners was made in a paper presented at the recent convention of the American Foundrymen's Association in Philadelphia by W. Paul Eddy, Jr., metallurgist of the company.

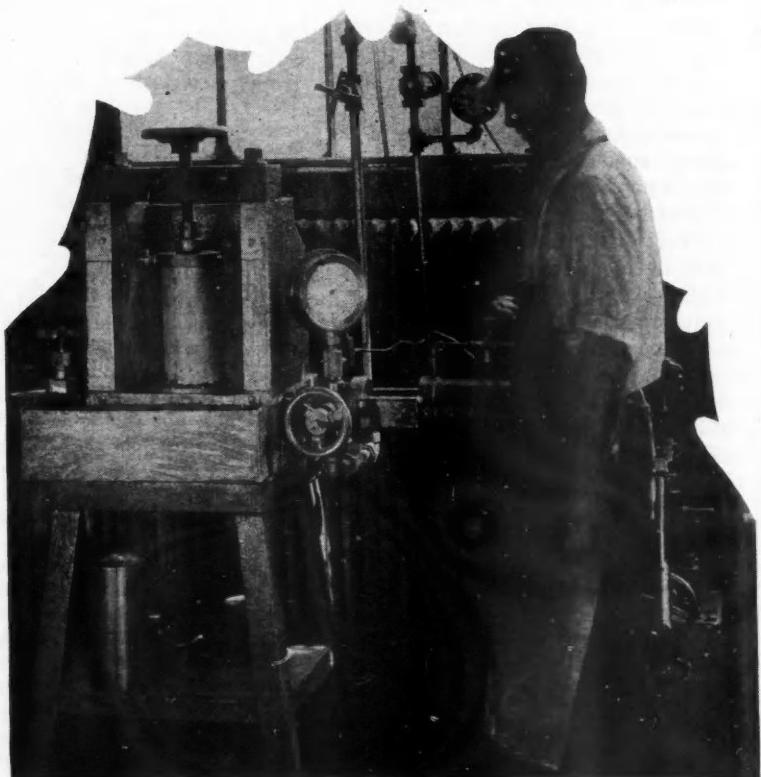
With the old blocks, running in equivalent to 400-600 miles of operation was required to break in the rings and cylinder walls, and the breaking in was complete at the end of the dynamometer run of 12-16 hours duration. With the new engines with hardened liners, from 3500 to 5000 miles of operation is required completely to break in the rings, but the engines can be operated on regular schedule as soon as received without harmful effects. Owing to the slower breaking in of the piston rings, the oil consumption is rather high at first, but it gradually decreases. On the largest engine the oil mileage increases from 50-60 per quart at the beginning

to 200-250 after complete breaking in. Then the oil mileage remains substantially constant for a considerable time, and later decreases with increase in wear. Operators usually recondition the cylinders when the oil mileage has dropped to less than 50 per quart.

The old blocks were usually reconditioned by honing to 0.010 in. oversize, and over-size pistons were then installed. While the liners also can be honed, it is a tedious operation, and it is usual to grind them 0.010 in. oversize and then to install over-size pistons. The old blocks were usually honed three times, 0.010 in. larger each time, and then were scrapped. The liners of the new engines can be reground as many times as the old blocks were honed, but after having been reground three or four times, the liners are renewed and the blocks need not be scrapped.

The period between reconditionings varies considerably with operating conditions and maintenance practice. Among the factors that influence the mileage between reconditionings are the type of operation (city or cross-country), the roads, speeds, lubrication practice, kind of fuel, corrosive conditions in combustion chambers, and proper maintenance of air cleaners, oil filters, oil coolers, and the engine cooling system.

With the old-style cylinders the periods between reconditionings would vary from 25,000 to 75,000 miles. The new cylinders, although the trucks now generally run on faster schedules, give from 75,000 to 200,000 miles service between reconditionings. In many operations which are particularly severe it is only necessary, after 75,000 to 125,000 miles, to install new standard-size piston rings, with which the



Applying the hydrostatic test

# Iron Cylinder Liners Engine Overhauls

engine can be run from 50,000 to 75,000 miles further before it needs to be reconditioned by grinding and the installation of over-size pistons. Tests on many liners after long periods of use have shown that the liners do not lose hardness in service.

With coaches a total mileage of 500,000 is not uncommon, and with the new cylinder liners this can be obtained with about one-third the number of reconditionings, while the cylinder block remains in use throughout the life of the coach.

The specifications for the iron of which the liners are cast are as follows: Quality: Castings shall be smooth, well cleaned, and free from shrinkage cavities, cracks, sand holes, large inclusions, chills, excess free carbides, and any other defects detrimental to machinability, appearance or performance. They shall finish to the size specified.

#### *Composition:*

Total Carbon .....	3.10-3.40 per cent
Combined Carbon ..	.75-.90 per cent
Manganese .....	.55-.75 per cent
Phosphorus .....	Max. .20 per cent
Sulfur .....	Max. .10 per cent
Silicon .....	1.90-2.10 per cent
Chromium .....	.55-.75 per cent
Nickel .....	1.80-2.20 per cent

#### *Physical Properties:*

Hardness, as cast—Brinell 212-241. Transverse Strength (A.S.T.M. arbitration bars)—2400 lb. minimum. Transverse Deflection—0.20-0.30 in. Tensile Strength (test bar machined from castings)—37,000 lb. per sq. in. minimum.

**Soundness:** Cylinder liner castings, when machined to approximately  $\frac{1}{8}$ -in. wall thickness, shall withstand 1500 lb. per sq. in. hydrostatic pressure, internally applied, without leakage or failure.

**Heat Treatment:** Cylinder liner castings with a wall thickness not greater than  $\frac{3}{8}$  in. shall, after being heated in an oven-type furnace at 1540-1560 deg. Fahr. for 30 to 40 minutes and quenched in still oil, have a hardness of not less than 512 Brinell or Rockwell C52.

Arbitration bars show transverse strengths of 2700 to 2900 pounds, on 18-inch centers.

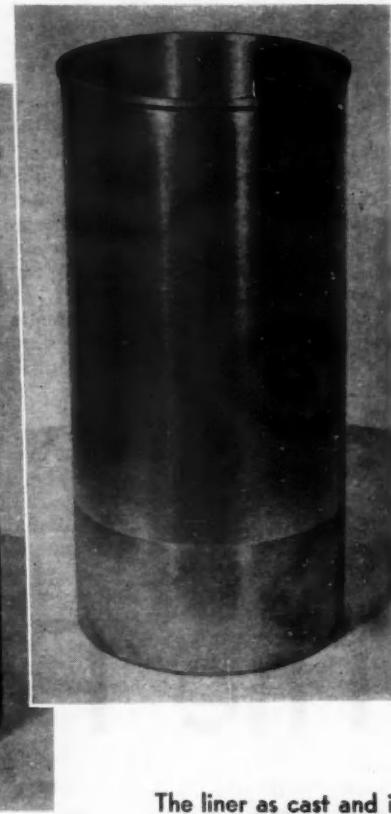
Tensile strengths, in lb. per sq. in. as determined from test bars machined

from castings, are in the following ranges:

	Lb. per sq. in.
As Cast .....	37,000-41,000
Aged .....	38,000-43,000
Hardened .....	28,000-36,000
Hardened, and tempered at 300 deg. Fahr. 2 hours .....	33,000-39,000
Hardened, and tempered at 350 deg. Fahr. 2 hours .....	36,000-40,000
Hardened, and tempered at 450 deg. Fahr. 1 hour .....	39,000-43,000
Hardened, and tempered at 600 deg. Fahr. 1 hour .....	45,000-56,000

Strength measurements have also been made by crushing machined liners radially between two flat parallel plates. Each load is measured at occurrence of the first crack, which is clearly audible. This test is more sensitive and gives more nearly reproducible results than does the tensile test.

Most of these cylinder liners harden



The liner as cast and in the finished state

satisfactorily when oil-quenched from 1475-1500 deg. F., but there are some which require heating to a somewhat higher temperature in order to produce maximum hardness after quenching. Varying hardening temperatures are undesirable from the standpoint of uniform distortion and growth, and all castings are heated in an oven furnace at 1550 deg. F. for 32 minutes.

Water quenching these liners results in the same hardness as oil quenching. When machined liners of 4  $\frac{13}{16}$  in. inside diameter and 5  $\frac{1}{8}$  in. outside diameter were heated in an upright position on the hearth of an oven furnace at 1550 deg. F. for 35 minutes and then quenched in an open tank with a slow up-and-down motion, the diameter increased from 0.013 to 0.018 in. in the case of a water quench and from 0.010 to 0.014 in. in the case of an oil quench; while the out-of-roundness amounted to 0.012 to 0.020 in. in the case of a water quench and 0.002 to

0.006 in. in the case of an oil quench. In the original design the liners were finish-ground on the outside diameters 0.003-0.005 in. larger than the hole in the cylinder block, and were assembled into the blocks from the bottom, the top surfaces of the liners being nearly flush with the top surfaces of the blocks. Loads of 6,000-12,000 lb. were required to press the liners into position.

This gave an ample press fit, but it was found that in service the interference decreased. The liners naturally become hotter than the surrounding metal of the block, and owing to the compressive stresses at high temperatures the liners suffer slight permanent contraction. This action in extreme cases may progress until the liners slip down in the blocks. This is prevented by the present design in which the liners have a small flange at the top, which enters a counterbore in the cylinders, the liners being assembled from the top.

Liners are cast in molds made in special three-part flasks, in the vertical position, with the flanged end up, and with a tangential gate at the bottom end, so the body of the casting is free from parting line and gate. An un-

usually large feed head is required. Cupola-melted cylinder iron is used, the necessary alloy additions being made in the ladle. Two lugs are cast on the flange for driving in the rough-machining operations. Only one lug is used for driving, but since one lug is occasionally broken off in handling or shipping, two are cast on.

Cylinder blocks are bored and liners ground to tolerances of 0.002 in., but selective assembly is employed, bores and liners being classified as "high limit," "low limit" and "intermediate," and liners of any particular class assembled into bores of the same class. This gives an interference very close to 0.0025 in. Only high-limit liners are used for service replacement, to assure good thermal contact between liner and block in the field. The block is immersed in boiling water for 15 minutes, then quickly mounted in guides on the table of a friction-drive vertical-spindle power press having hydraulic connection to the plunger. A pressure gage connected to the hydraulic chamber is calibrated to read total pressure in lb. on the plunger. Liners at room temperature are pushed into the bores without lubricant. When each liner is 1 in. above its assembled position, the

gage must read between 3,000 and 4,500 lb. Each barrel is counterbored 0.005 in. deeper than the width of the liner flange. In its final position the liner is 0.002 in. above the top surface of the block; this is controlled by the piloted compression plate, which is counterbored 0.002 in. deep to fit the liner. Contact of the plate against the cylinder block completes the assembling operation.

Stainless steel Welch plugs are used to close the core holes in the cylinder block. After these plugs and the cylinder studs are put in place, the block is subjected to a water test under 90 lb. per sq. in. pressure. The slightest leak results in scrapping of the block, no salvaging being permitted. A horizontal spindle Heald Model 50 cylinder grinder with ball-bearing spindle is used for finish-grinding the bores. The finishing of the bore comprises three roughing and two finishing passes, the total amount of material removed being from 0.009 to 0.012 in. on the diameter. Grinding is dry, but during the operation water is pumped through the water passages of the block and is made to flow over the liner skirts which project below the bottom of the block.

# The Forum =

## Day Rates vs. Piece Work

*Editor, AUTOMOTIVE INDUSTRIES:*

Mr. Denham's article "Day Rates Supplant Group Bonus" in your Dec. 8 issue, is a fair statement of the facts and good in its explanation so far as he goes. There is one point, however, which is very important and which seems to be overlooked by most people. I mean the fact that in either the line assembly work or automatic machine operation which prevails to such an extent in the automotive industry, piece rate, whether individual or group, is never like piece work in other applications because the worker cannot choose his rate of production. Similarly, day work is not like other day work because the number of pieces is controlled.

It seems to me that this is the main significant point in the whole problem and explains why the whole issue can hang upon the annoyances which may come out of union activities. In other types of industry much more is to be considered and I should feel more concerned if such industries undertook this new policy. In the past they did err

in following the automotive industries in the group application of incentives and in many cases had to return to individual work. The influence of the automotive industry is so great that something similar may happen now. If so, I prophesy a return to incentive plans as soon as the depression is over. Neither the need for assured efficiency

nor the matter of human nature are likely to be changed in the long run, and a well-suited incentive plan properly administered is bound to be superior to day rate basis for all but jobs where production is controlled mechanically.

CHAS. W. LYTHE,  
Director of Industrial Cooperation,  
College of Engineering,  
New York University.

## Track Results Check Andreau's Reflection Testing in Wind Tunnel

*Editor, AUTOMOTIVE INDUSTRIES:*

I wish to thank you for publishing an adaptation of the paper on the Air Resistance of Cars which I presented to the S.I.A. and the S.N.Ae.

Mr. Igor I. Karassik, however, does not seem to appreciate the reflection method used by us.

The tests he refers to were made with a two-dimensional flow. Our tun-

nel operates with a three-dimensional flow, and in that case the vortices are of less relative importance. He says nothing of the Reynold's number of the tests. The photographs indicate that the tests were carried out at very low values of R, and such tests cannot be compared with wind-tunnel tests of automobiles, because the flows are so different.

We ascertained by a special investigation that on the average the air velocity in the plane of symmetry was the same as the velocity at a distance, and also that there was symmetry of flow around and behind the models. We have so arranged our tunnel that the air is agitated to a certain extent and that for the values of  $R$  obtaining in our case, the flow is still turbulent in character. This means that the flow around our scale models is substantially the same as that around full-sized cars.

The results of our tests on scale models are closely checked against figures obtained on tests of the actual cars at Monthlery track, not only for the whole car but also for such details as headlamps. Laminar (streamline) flow, or the type of flow intermediate between streamline and turbulent flow cannot be compared with the actual flow around full size models. Mr. Karasik's deductions therefore are not valid.

We have been testing car models for eight months now, and the check-up on the track shows that we are getting accurate results regularly. Incidentally I may mention that we have now arrived at car models in which the air resistance is reduced 80 per cent, as compared with the D-8-15 sport. This shows the efficacy of laboratory research, carefully carried out, if scientific knowledge of the problems involved is properly applied.

J. ANDREAU.

## A Style Note on a Style Note

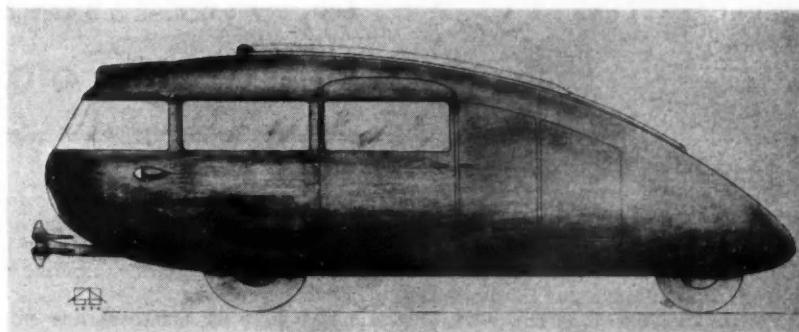
*Editor, AUTOMOTIVE INDUSTRIES:*

In Nov. 27 "A.I." you refer to a frat pin. Might I mention "frat" is very much out—never used—always fraternity—Fraternity pin if you want, or the very best in style "Fraternity badge."

A. Coming M. E.,  
Ithaca, N. Y.

Twenty odd years ago "frat" used to irritate the brothers at the editor's fraternity house too.

## New Car Being Built



*Editor AUTOMOTIVE INDUSTRIES:*

A new car being built in Portland, Ore., has three wheels instead of four. The three-wheeled-car idea is not new, since it was embodied in some of the first self-propelled vehicles; but it does possess many advantages, such as making parking and steering easier. Many other features of the new car are ultra smart and novel, however.

The body is fully streamlined, without fenders, and of airplane construction, using specially-developed frame members of duralumin. Steering is by means of the single rear wheel. The wheelbase is 126 in. and the body is extra wide and roomy inside, since fenders are eliminated. The "skin sheet," also of "dural," runs underneath and is a continuation of the side sheet.

Another departure from present practice is the use of only one main headlight with side marker lamps similar to the running lights on a ship. With present cars, when passing a "one-eyed" car at night it is difficult to determine which light is out, and colli-

sion may result, especially on narrow roads. The small side lights of the new car are of sufficient strength to prevent accident in case the main light should go out for any reason. With this system the driver has to renew the main light before proceeding, and this lessens the chance of neglect.

The powerplant is most unusual. The internal combustion power-generator unit, placed in the rear, is the result of about eight years of research and experimenting. Its use greatly simplifies the powerplant construction. There are less than 75 moving parts in the entire car. The engine has extreme flexibility and for this reason is geared directly to the differential on the front axle eliminating transmission gears and clutch. Simplicity of operation is an outstanding feature. The gear ratio is approximately 4 to 6 and the engine can turn the wheels under all conditions. With tires of 30 in. diameter the engine makes slightly over 1000 revolutions per mile. The use of the new powerplant makes possible the proper weight distribution required by the three wheel streamlined car design.

The radiator is of a new patent streamline design and is placed on top of the car, parallel to the body. This new design makes it possible to pass the greatest mass flow of air over its surface. Since the radiator is dry when the car is standing it is not subject to freezing in winter.

With reference to the side view drawing, the first compartment behind the door holds spare tires on the left side and luggage on the right side of the car. The rear compartment houses the primary part of the power plant.

The springs are of the torsion type and are adjustable. Hydraulic dampers control the spring action. Power jacks are built in.

Patents are pending on all features of construction. While part of the car is already built and the engine has been thoroughly tested, an approximate date for its completion has not been determined.

G. A. DIEHL.

## Some Views on the Fundamentals on Inlet Manifolds

*Editor, AUTOMOTIVE INDUSTRIES:*

In your Oct. 6 issue Fig. 1 on page 416 shows a three-port inlet manifold of the usual standard and modern (?) type, which, however, includes all that tends to obstruct and defeat mixture and fuel distribution.

To illustrate one glaring defect, let us assume three carburetors, three risers, and three equal leads, one to each pair of inlet valves, with no runner between the three equal units. It is evident that in each there is one right-angled turn from the vertical to the horizontal supply pipe to the valves. Just forget for the moment the difficulty of tuning the three carburetors and the firing order. Who will dispute

the claim of uniform flow, uniform friction, and uniform mixture of equal fuel content at the inlet valves?

Fig. 1 shows one such unit to the center pair of cylinders, forming the most direct and shortest passage between the carburetor throat and the inlet valve, and one right-angled turn as stated above. What is added to supply the outer pairs of cylinders? Two sections of pipe and two horizontal ellipses at each junction. This evidently adds friction due to the runners and ellipses. Yet we are told that things that are similar are equal to each other and inversely, things that are different are not equal to each other. Is that ideal? It is not!

JAMES MCINTOSH.

# NEW DEVELOPMENTS

## Automotive Parts, Accessories and Production Tools

### Internal Cylinder Lapping for Gears

To provide a means of lapping gears to a greater degree of accuracy with consistency, speed and facility, the Hutto Engineering Company, Inc., Detroit, Mich., backed by its extensive experience in the honing of internal and external cylindrical surfaces and other abrasive operations, has developed a new method of gear lapping, said to be unlike any method previously used.

reciprocating motion solely for the purpose of uniformly distributing the abrasive effect over the face of the gear tooth in a manner similar to cylindrical grinding.

Two lapping members are employed at diametrically opposite sides of the work piece in combination with a supply of suitable abrading material. The driven lapping member, through engagement with the work piece which is in turn driven by the driving lapping member, is retarded through a braking means and a pressure is thus



The Hut-O-Lap method features a novel principle, that of angular inclination of lapping member with respect to that of the work piece gear in such a manner as to create a line of rolling contact between the lap and work piece at an angular position with respect to the position of the normal line of rolling contact on work piece tooth.

In this manner, abrasive action is produced along the normal line of the gear tooth, by rotary motion only, without sacrificing full face width contact which is extremely beneficial in correcting bearing wobble, cross bearing, end bearing, etc. Unlike the reciprocating speed employed in conventional lapping methods, the "inclined axis" method employs an extremely slow longitudinal

brought to bear upon opposite flanks of the work piece teeth to assure the desired abrading effort.

Inasmuch as the axes of the lapping and work members lie in a common plane the "*inclined axial engagement*" of two or more geared members for gear lapping purposes is well suited to engagement of multiple lapping members with a multiple type of work piece gear, such as a cluster or herringbone gear and makes possible simultaneous lapping of two or more gear members on this type of gear.

The Hut-O-Lap machine is adaptable to any type of cylindrical gear; spur, helical or internal; it will take work up to 8 in. O.D. and 12 in. in length. Floor space required is 48 x 52 in. Net weight 3100 lb.

### Binks Wash Spray Booths

Removal of fumes from spray booth air by washing is said to be accomplished by simple and effective system just announced by Binks Manufacturing Company, Chicago, Ill.

The front part of the booth where the spray finishing operations are performed meets all the requirements of the National Board of Fire Underwriters, the Underwriters' Laboratory and health authorities. The conventional Binks distributing plates provide a uniform suction of air from all parts of the booth with a minimum exhausting power required.

The water spray nozzles are the Binks patented non-clogging Rotojet nozzles developed for spray cooling towers. They accomplish the break-up of water by means of an involute whirl chamber and without any slotted disks or moving parts and require only low water pressure for their operation, increased efficiency, and a smaller pumping unit which consumes less power.

The air, heavy with spray fumes, after passing beyond the distributing plates is drawn downward, where an intense water spray from the first manifold washes it. The air continues downward until it is past this first manifold, then it is carried upward, where another spray from the Rotojet nozzles on the second manifold further cleanses it.

### New Multiple- Point Recording

Reading of multiple-point instrument records is greatly simplified by a new system of "numerals in colors" introduced by Leeds & Northrup Company, Philadelphia. This marking system can be specified on Micromax strip-chart recorders for 2, 3, 4 or 6 points. With each of the thermocouples, resistance thermometer bulbs or other primary elements identified on the chart by a numeral, and each numeral distinguished from the others by being printed in a contrasting color, reading of records is made easier. Colors used for printing the numerals are: black, green, red, violet, yellow and blue.

The print-wheel on these Micromax multiple-point recorders has a separate inking pad for each point to be recorded.

### Friction Brake Now Standard

The Canton Foundry & Machine Co., Canton, Ohio, makers of Canton portable cranes for general shop use, has announced that this equipment is now available with safety friction load brakes. The brake attachment holds the load at any point and insures positive safety to both operator and load.

## Jack Operated from Standup Position

Jacking up of cars has long been an awkward job and has been rendered still more difficult by the sheet-metal treatment of the newer models. A new jack designed to solve this difficulty is the R. & H. "Standup" jack manufactured by Ryerson & Haynes, Inc., of Jackson, Mich. It is standard equipment on one of the popular makes of car for 1935.



Standup jack in position

The R. & H. jack picks up the car by the back of the bumper. At the bottom there is a removable base into which the shaft fits. The base is not rigidly held but can find its own position. A bracket engages the back bar of the bumper, and the car is then lifted by turning the crank. It is not necessary for the operator to stoop or to crawl under the car to get the jack into position.

## New G-E Tachometer

A new tachometer, designed to withstand the severe operating conditions of aircraft service and applicable also to other types of equipment which can be provided with a standard S.A.E. outlet similar to that used on aircraft engines, has been introduced by the General Electric Company. Features claimed include ease of reading and long life. It weighs only 3 lb.

The new device operates on a generated-frequency principle. Its generating unit has no brushes or slip-rings. The rotor is direct-driven. Since the generated-frequency principle is employed, neither loss of voltage in the generating unit nor polarity of the

leads affects the accuracy of the reading. The indicating instrument is carefully calibrated for temperature effects and has a pointer that remains steady under all conditions.

The indicator of the standard tachometer reads from 0 to 2500 r.p.m. when the generating unit is turning from 0 to 1250 r.p.m., but a wide range of optional driven and indicated speeds may also be obtained. One of the secondary applications for which the device is said to be well suited is that of engine-speed indication on medium and large sized motorboats.

## Type C Cylindrical Grinder

Norton Company, Worcester, Mass., has added a new cylindrical grinder to its Type C line. The machine has a nominal swing of 6 in. and is built in either of two lengths taking 18 in. or 30 in. between centers.

Patterned after the 10-in. and 16-in. Type C machines, this new 6-in. has a self-contained wheel unit and uses a standard 20-in. diameter grinding wheel. The wheel spindle, which is 50 per cent heavier than in earlier 6-in. machines, is end driven by vee belts direct from the mounted motor, no idlers or intermediate shafts being required.

The work carriage consists of a sliding table traveling in a vee and a flat way in the base and which supports a swivel table pivoted to it at the center. Both table ways are forced-feed lubricated under patent license from the G. A. Gray Company.

Power traverse machines are hydraulically propelled, the oil pump and its driving motor being an integral unit mounted within the base beneath a convenient cover plate. The reverse and throttle valves are of the same design used on larger Norton Type C machines. The table is traversed by a double-rodded piston connected to each end with a quick-acting latch. The table can also be moved by a hand wheel, which is automatically disconnected when the power traversing units are engaged.

For plunge-cut operations only, a hand traverse unit is substituted for the power traverse elements. This unit has a slow speed for wheel truing and a fast speed for moving the table into grinding position if necessary. The change from one to the other is easily and quickly made by means of a knob on the hand wheel.

Both hand and power traverse machines can be equipped with a hydraulically operated wheel head traverse unit. This unit moves the wheel head rapidly in and out between grinds for as much as 3 in. if required.

The 30-in. machine complete with all motors and standard equipment weighs approximately 4700 lb. and requires a floor space of 57 x 112 in.

**BUNDYWELD** for Durability

Manufactured by

BUNDY TUBING COMPANY • 10951 Hem Avenue • DETROIT

**SKF Bearings Bring**

# LONGER LIFE

*To Trucks And Buses*

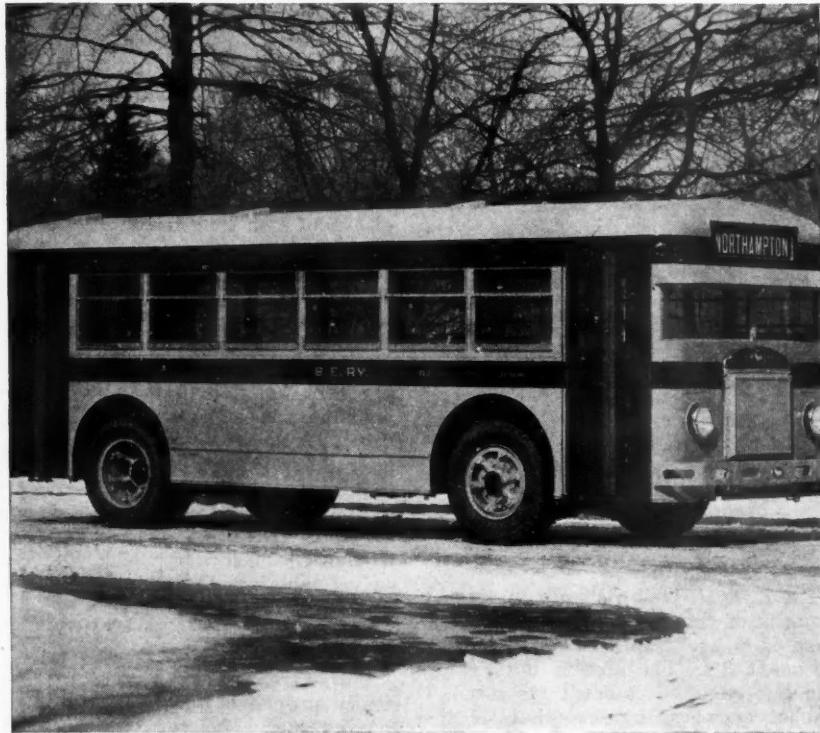
● SKF makes practically all types of anti-friction bearings. When SKF recommends a particular type of bearing, therefore, you may depend upon it; its recommendations are unbiased!



**SKF**  
BALL AND ROLLER BEARINGS

February 2, 1935

3337



**SKF-EQUIPPED**

**BUILT BY MACK TRUCKS, INC.**

Mack buses promote dependable, low-cost, safe transportation! They offer armchair comfort...roll from one place to another "on time"! And they're assured of smooth operation by SKF Bearings on the front of the countershaft and on the spigot of the transmission.

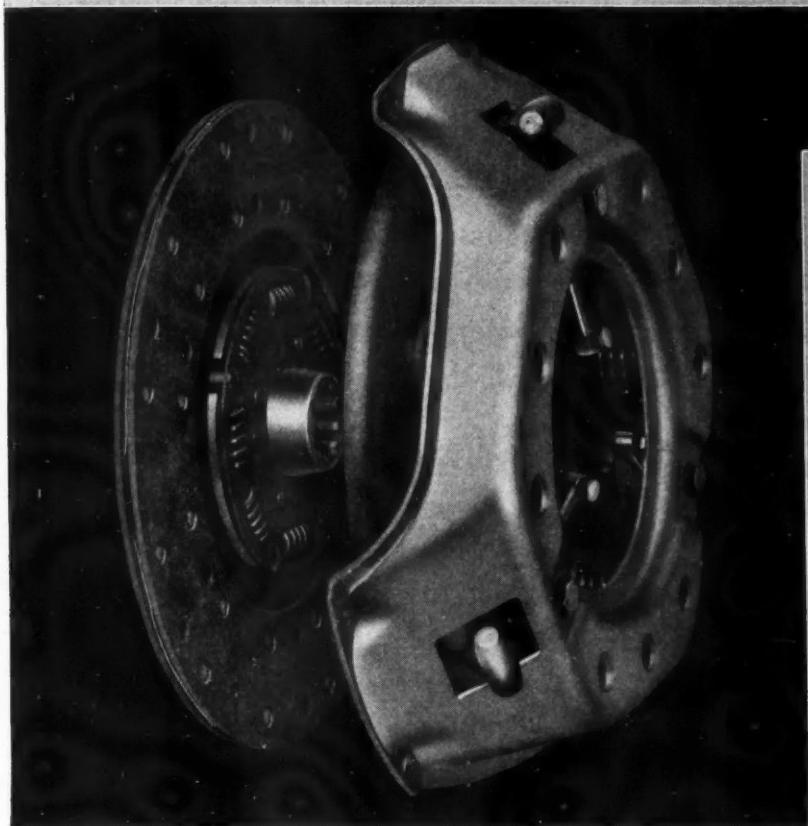
SKF prolong transmission life...give quiet gear operation due to maintained alignment and correct gear meshing... permit maximum bearing capacity for a minimum of space, resulting in a light, compact unit. Therefore, Mack depends upon SKF to withstand strains of buses traveling in all kinds of weather. For SKF is backed by an organization that specializes in the manufacture of fine bearings. The simple statement, "SKF-equipped", is a very generally accepted warranty of the quality of the bearing itself.

SKF INDUSTRIES, INC., Front St. & Erie Ave., Philadelphia, Pa.

*Automotive Industries*

*Presenting an Improved*

# LONG CLUTCH



A SINGLE PLATE  
DRY DISC CLUTCH  
WITH  
IMPROVED DESIGN  
•  
IMPROVED MATERIALS  
•  
IMPROVED  
CONSTRUCTION  
•  
IMPROVED  
PERFORMANCE

The new cover plate gives greater rigidity and freedom from deflection during release, and greatly improved ventilation of the pressure plate. The unique lever system provides greater torque capacity with increased engine speed, gives low pedal pressure for traffic driving, and the desirable "lively" pedal operation at all times.

AUTOMOTIVE CLUTCHES  
RADIATORS • GRILLES

**LONG**  
DIV. OF BORG-WARNER CORP.



LONG MANUFACTURING COMPANY DETROIT, MICHIGAN

*Automotive Industries*

February 2, 1935

**vade-mecum** (<Latin, *vade*, "go" + *mecum*, "with me"—"go with me"). A book that is kept as a constant companion.

The Annual Statistical Issue of Automotive Industries is the vade-mecum of administrative executives, production men, engineers, designers, shop superintendents, purchasing agents, sales and advertising executives, in all kinds of automotive industrial plants.

For sixteen consecutive years the responsible men in automotive plants, have depended upon the Statistical Issue of Automotive Industries as their compendium—their necessary work tool—their invaluable hand book—their correct interpreter of statistics which guide to bigger business—in a word, their vade-mecum.

### The Seventeenth Annual Statistical Issue

of

## AUTOMOTIVE INDUSTRIES

will be published February 23, 1935

If you have a product or service to sell to any kind of automotive plant, you will find it extraordinarily profitable to use forceful copy in dominant space in this issue. Your advertisement will work for you a whole year.

In your own interest, we suggest an early reservation of space. Final forms close February 18, 1935.

## AUTOMOTIVE INDUSTRIES

*A Chilton Publication*

Chestnut and 56th Sts.

Philadelphia